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**DOE RESPONSES TO U.S. EPA AND OEPA  
COMMENTS ON THE INITIAL SCREENING OF  
ALTERNATIVES FOR OPERABLE UNIT 2 TASK 12  
REPORT JANUARY 1991 FMPC-0212-5 APRIL  
1991**

**04-01-91**

**DOE-ORO/EPA  
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REPORT**

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**DOE RESPONSES TO  
U. S. EPA AND OEPA COMMENTS  
ON THE  
INITIAL SCREENING OF ALTERNATIVES  
FOR OPERABLE UNIT 2**

**TASK 12 REPORT**

**January 1991**

**FMPC-0212-5**

**April 1991**

## FMPC RI/FS

EPA (REGION V) COMMENTS ON THE DRAFT FINAL OPERABLE UNIT 2 INITIAL  
SCREENING OF ALTERNATIVES REPORT

1. -	Commenting Organization: EPA	Commentor:	
	Pg. #	Section #	Paragraph #
	Original Comment # 1		Sent./Line #

**Comment:** As stated in comments on previous draft ISA reports, U.S. DOE's approach to establishing preliminary remediation goals does not comply with the National Contingency Plan (NCP). However, the level of detail presented for establishing preliminary remediation goals is acceptable at this point in the FS process. However, preliminary remediation goals in the FS must be established on specific exposure scenarios and based on risk to receptors. At this point there are two predominant deficiencies in the proposed strategy for establishing preliminary remediation goals. First, U.S. DOE has not summed the risks from proposed "acceptable concentration" to determine the overall risk of a particular media. Second, DOE continues to use dose-based (instead of risk-based) remediation goals for the radionuclides. U.S. DOE should consider:

- (A) Summing the risk from all contaminants from a particular media (and later all media) when setting preliminary remediation goals. Even where promulgated standards are established, DOE must determine the summed risk from all carcinogens, which must not exceed the 1E-06 cancer risk level or a Hazard Index (HI) of 1.
- (B) Using the 25 mrem/year overall exposure dose limit instead of the 100 mrem/year limit proposed if U.S. DOE continues to use dose-based remediation goals instead of risk-based remediation goals. U.S. EPA recommended this 25 mrem/year overall exposure dose limit for the remediation goal of the Maxey Flats Superfund site.
- (C) Providing a table presenting the following for each potential chemical of concern, the ARAR (including TBCs); the concentration resulting in a 1E-06 risk for carcinogens or an HI of 1 for noncarcinogens considering each contaminant independently; and the concentration resulting in a 1E-06 risk for carcinogens or HI of 1 for noncarcinogens considering the contaminants collectively.

After risk-based preliminary remediation goals are established, they can be refined in the FS when considering risk management type factors such as potential exposure, technical practicality, cost and so on.

**Response:** Based on a dispute resolution meeting between representatives of EPA, OEPA, and DOE held March 12, 1991, the dispute was resolved by EPA and DOE with agreement to have DOE submit addenda to the RI and FS workplans detailing

methodology for establishing RAOs, and the proposed preliminary RAOs.

**Action:** Text discussing RAOs is left as is, however a revised text was added to the document explaining that these RAOs are preliminary, and are currently under review by DOE and EPA.

Complete the addenda to the RI and FS Work Plans.

2.	Commenting Organization: EPA	Commentor:	Sent./Line #
	Pg. #      Section #	Paragraph #	
	Original Comment # 2		

**Comment:** The description of contaminant concentrations and waste volumes seems to rely only on the results of the Characterization Investigation Study (CIS) conducted by Weston in December 1987 and reported in Appendix C of the ISA report. Additional sampling and analysis to be conducted as part of other programs could significantly affect the ISA results and thus should be considered prior to the detailed analysis of alternatives. Additional information needs are outlined in the Facilities Testing Program (FTP) Work Plan (November 1988) and subsequent revisions to the remedial investigation and feasibility study (RI/FS) Work Plan (November 1990). This needs to be discussed along with how the results could affect the alternatives.

**Response:** Reliance on the Weston CIS is necessary simply because it is the only source of data available at this time; otherwise the process of cleanup could not begin. In the case of the Southfield, there is additional data available from the Facilities Testing Work Plan. This data will be included in the revised ISA Report. It is difficult to quantitatively assess the impact of additional data on the ISA without having the data. However, for radiological constituents, there are a minimum of three borings in the Sanitary Landfill and Lime Sludge Ponds, two in the Inactive Fly Ash, and one in the Active Fly Ash (DOE Environmental Survey). Several borings were placed in the northern portion of the Southfield, however, because of suspected rubble (from previous demolition activities) and trenches were excavated in the Southfield under the Facilities Testing Program. The CIS also sampled at selected depth intervals (for radiological constituents) thus providing the vertical extent of radiological contamination as well. It is unlikely that the additional sampling will affect the development and screening of alternatives to the extent that the conclusions reached are invalid. The additional sampling will provide better confidence in source term characterization for both radiological and organic constituents. Due to the nature of the wastes in Operable Unit 2, high levels of organics are not likely, and thus far have not been found. Should significant differences be found after the results are complete, changes in alternative definition can be made later.

**Action:** The results of the Southfield trench excavation data were added to Appendix C.

3.	Commenting Organization:	Commentor:	Sent./Line #
	Pg. #      Section # 2	Paragraph #	
	Original Comment # 3		

**Comment:** Several portions of Section 2 discussing the preliminary evaluation of process options do not provide a consistent level of detail. For example, Section 2.6.1.5 discusses the effectiveness and implementability of each treatment process option. However, Section 2.6.2.6 discusses only the effectiveness and implementability of the selected process option. The results of all evaluations (both effectiveness and implementability) should be presented for all process options listed in the figures. This consistent approach, while not specifically required by EPA guidance, would greatly increase the clarity of the ISA report.

**Response:** DOE agrees there are inconsistencies as noted in the comment. Section 2.6.2.6 discusses the EDF only; additional detail on above/below grade vaults was inadvertently omitted.

**Action:** Text was revised as noted in the response. Section 2.4.1.2 was revised to discuss EDF.

4.	Commenting Organization: EPA	Commentor:	
	Pg. #                      Section #	Paragraph #	Sent./Line #
	Original Comment # 4		

**Comment:** As noted in the reviews of previous drafts, DOE assumes that an engineered disposal facility (EDF) can be sited within the boundaries of the FMPC. However, the evaluation of siting the EDF is not complete. The EDF investigation must be completed and the results considered when conducting the detailed analysis of alternatives.

**Response:** DOE agrees; however, maintaining the schedule for delivering the ROD will prevent this information from being available for incorporation into OU 2 documents. In the case of OU 2, risks due to the groundwater exposure pathway are not driving the risk assessment. Capping the wastes with a multilayer cap achieves acceptable risk levels. Placement of the wastes in an EDF would make the risks much lower (due to engineered features constructed beneath the waste), but if a cap alone achieves acceptable risk, then the objective is accomplished.

**Action:** Rescheduling of RI/FS Report work is being integrated for the whole site.

5.	Commenting Organization: EPA	Commentor:	
	Pg. #                      Section #	Paragraph #	Sent./Line #
	Original Comment # 5		

**Comment:** Although not required at this stage of the feasibility study, EPA does require that a quantitative analysis be conducted to demonstrate the percent reduction in toxicity, mobility, or volume of hazardous substances (55 FR 8721). This analysis should be conducted and considered in the detailed analysis of alternatives.

**Response:** The analysis specified in the comment requires a treatability study. Preparation of a work plan is underway for submittal to EPA. Due to the addition of treatment alternatives in

the ISA report, this study should be pursued and results incorporated into the detailed analysis of alternatives when available.

Action: Prepare and submit treatability study Work Plan to EPA.

6.	Commenting Organization: EPA	Commentor:	
	Pg. #                      Section # 5	Paragraph #	Sent./Line #
	Original Comment # 6		

**Comment:** Two issues concerning the costs in Section 5 consistently arise for each of the suboperable units. First, the increase in capital cost from \$6 million for alternative 1 (containment) to \$8 million for alternative 2 (containment with collection and treatment of a small volume of groundwater at a very low rate) seems excessive. Second, Section 5 consistently reports operation and maintenance (O&M) costs for off-site disposal. These are costs incurred by the disposal facility (not the generator) after receipt of the waste materials.

**Response:** DOE agrees with issue 1. The description for Alternative 1 includes a water treatment system to treat captured surface water; however the capital costs for this system were inadvertently left out. Concerning issue 2, capital costs will be incurred to implement an offsite disposal alternative, even without considering the O&M costs associated with maintaining a disposal facility. O&M costs associated with fixed facilities are required to implement this alternative.

**Action:** The cost estimate was revised to include capital costs for a water treatment system for Alternative 1, as well as treatment costs for captured surface water.

7.	Commenting Organization: EPA	Commentor:	
	Pg. #                      Section #	Paragraph #	Sent./Line #
	Original Comment # 7		

**Comment:** It is not clear whether DOE is proposing to remediate groundwater in the perched water table aquifer. First, DOE did not include remedial action objectives or a point of compliance for the perched groundwater. However several portions of the perched water table aquifer have contaminant concentrations above both background concentrations and applicable relevant and appropriate requirements (ARAR). DOE should state whether the groundwater will be remediated and then justify its proposal. If not remediated, groundwater monitoring of the perched water table aquifer could be included in the alternatives that require waste to remain in place. If DOE proposes to remediate the groundwater, a remedial action objectives and points of compliance must be established to monitor the effectiveness of the groundwater remediation and to demonstrate compliance with established groundwater remediation goals.

**Response:** DOE agrees.

**Action:** Text has been added to the report to separate groundwater residing within the regional aquifer from perched groundwater. Point of compliance for perched groundwater is discussed in the revised text; however, the need for a point of compliance depends on the use the groundwater will have with respect to human consumption. The issues of remedial action objectives and point of compliance for perched groundwater are being resolved. Addenda to the FMPC RI and FS Work Plans are in preparation for submittal to EPA for review and approval. These addenda will detail the methods for development of remediation goals and points of compliance and will serve as the basis for deciding specific remediation goals associated with any groundwater within Operable Unit 2 Areas.

8.	Commenting Organization: EPA Pg. #                      Section # 2.2.4 Original Comment # 8	Commentor: Paragraph #	Sent./Line #
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**Comment:** Section 2.2.4 states that risk-based RAOs are developed in a manner similar to the development of maximum contaminant levels (MCLs). This statement is misleading and should be deleted since MCLs include additional factors such as technical limitations and cost. Risk-based RAOs are based solely on the potential risk to human health. The application of ARARs and the use of risk-based RAOs are independent processes, and the distinction between these should be made clear.

**Response:** See response to comment 1.

**Action:** See the action to comment 1.

9.	Commenting Organization: EPA Pg. # 2-14              Section # 2 Original Comment # 9	Commentor: Paragraph # 2	Sent./Line #
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**Comment:** Section 2, page 2-14, paragraph 2: U.S. DOE's response to U.S. EPA comment 15 mis-stated guidance for establishing cleanup levels at the Maxey Flats site. The Maxey Flats guidance (U.S. EPA memorandum, November 19, 1990) allows a radionuclide action level for groundwater based on a 4 millirem (mrem) dose to the whole body or any organ only for beta and photon radioactivity from human-made radionuclides. This level does not apply to uranium contamination in groundwater. Since there is no chemical-specific ARAR for uranium in groundwater, the appropriate guidance for establishing clean-up levels is the CERCLA risk range of 10E-04 to 10E-06 range.

**Response:** See response to EPA comment 1.

**Action:** See action for EPA comment 1.

## SPECIFIC COMMENTS:

10.    Commenting Organization:                      Commentor:  
       Pg. # 1-24                      Section # 1.5.4.2                      Paragraph # 3                      Sent./Line #  
       Original Comment #10

**Comment:**    Section 1.5.4.2, Page 1-24, Paragraph 3: The current land use scenario for surface water considers only current use of the Great Miami River. However, current land use scenarios should also consider exposure from contaminated surface water and sediments in Paddys Run located between the source areas and the discharge point to the Great Miami River.

**Response:**    By mutual agreement between EPA, OEPA, and DOE on a phone call held March 27, 1991, Sections 1.5.4 and 1.5.5 have been deleted from the final OU 2 ISA report.

**Action:**       As noted in response.

11.    Commenting Organization: EPA                      Commentor:  
       Pg. # 1-24                      Section # 1.5.4.2                      Paragraph # 3                      Sent./Line #  
       Original Comment # 11

**Comment:**    Section 1.5.4.2, Page 1-24, Paragraph 3: This section of the ISA report assumes that the only contributor of contaminants to the Great Miami River is the active flyash pile. However, this assumption contradicts the information presented in Section 1.5.2.4 where it is reported that the source of surface water contamination in this area is the inactive flyash pile.

**Response:**    See response to EPA comment 10.

**Action:**       See action for EPA comment 10.

12.    Commenting Organization: EPA                      Commentor:  
       Pg. # 1-25                      Section # 1.5.4.2                      Paragraph # 2                      Sent./Line #  
       Original Comment # 12

**Comment:**    Section 1.5.4.2, Page 1-25, Paragraph 2: Insufficient information is presented to support the approach of using the contaminant concentrations in sediment at the confluence of Paddys Run and the stormsewer water outfall ditch as the concentration of chemicals of potential present concern.

**Response:**    See response to EPA comment 10.

**Action:**       See action for EPA comment 10.



13.    Commenting Organization: EPA                      Commentor:  
        Pg. # 2-2            Section # 2.1                      Paragraph # 1                      Sent./Line #  
        Original Comment # 13

**Comment:**    Section 2.1, Page 2-2, Paragraph 1: The point of compliance for soil should conservatively be set anywhere within the waste management unit. DOE cannot assume that passive controls such as fences or deed restrictions will prevent people from exposure while on the waste management unit. However, the type of exposure considered in the future use scenarios may not include direct contact with waste materials.

**Response:**    The issue of points of compliance is not resolved. Addenda to the FMPC RI and FS Work Plans are in preparation for submittal to EPA for review and approval that will detail the methods for development of points of compliance.

Institutional controls are valid supplements to remedial actions and are permitted by the NCP. Direct contact with the waste materials for future land-use scenarios is evaluated for baseline conditions in the RI/RA.

**Action:**        Complete the addenda to the RI and FS Work Plans. Based on a telephone conference between DOE, EPA and OEPA on March 27, 1991, it was agreed that DOE would submit revised text to EPA for consideration. The text faxed to EPA from DOE on April 3, 1991 is included in the revised text.

14.    Commenting Organization:                      Commentor:  
        Pg. # 2-2            Section # 2.2-1                      Paragraph # 4                      Sent./Line #  
        Original Comment # 14

**Comment:**    Section 2.2-1, Page 2-2, Paragraph 4: A point of compliance must be established for the perched water table aquifer. See similar EPA comments on other ISA reports. A point of compliance for sediment must also be established. The point of compliance established at the boundary of the waste unit for the soils is acceptable (assuming soils include waste materials in the lime sludge ponds, flyash piles, and sanitary landfill) and assuming that future receptors will not have direct exposure to waste materials after a remedial action is completed. However, the risk assessment must determine the risk to future use receptors in the absence of remedial action. Such an assessment would include direct contact with waste materials. Determining in the baseline risk assessment that direct contact with waste materials presents an unacceptable risk (>10.6 increased cancer risk) does not preclude containment remedial actions because eliminating the exposure route is a viable remedial alternative. However, the risk via direct exposure to waste materials must be determined in the event the containment remedial action alternative fails or is breached.

**Response:**    The issue of points of compliance is not resolved. Addenda to the FMPC RI and FS Work Plans are in preparation for submittal to EPA for review and approval that will

detail the methods for development of points of compliance. Future land-use scenarios in the baseline risk assessment include direct contact with the waste materials.

Action: See action for comment 13.

15. Commenting Organization: EPA      Commentor:  
Pg. # 2-3      Section # 2.2.2      Paragraph # 2      Sent./Line #  
Original Comment # 15

**Comment:** Section 2.2.2, Page 2-3, Paragraph 2: The reference to Table 2-1 incorrectly states that the table lists contaminants of potential concern associated with exposure pathways and media. Exposure pathways and media are not included in the table. Second, Section 1.5.4.1 states that all chemicals and radionuclides within the boundaries of waste units at levels exceeding background concentrations are considered potential contaminants of concern for future use scenarios. Therefore, the following chemicals and radionuclides should be included in Table 2-1: arsenic, cobalt, mercury, nickel, cesium-137, lead-210, and strontium-90. All other tables that present risk information or preliminary remediation goals should also be revised accordingly.

**Response:** The reference to Table 2-1 did not indicate that exposure pathways and media are included in the Table, only that the listed chemicals of potential concern are those associated with the significant pathways to potential human receptors. This Table also does not contain all chemicals above background, but only those associated with the significant pathways to potential human receptors (i.e. those chemicals of potential concern quantitatively evaluated in the baseline risk assessment).

**Action:** The reference to the material contained in Table 2-1 has been clarified; Section 1.5.4 was deleted from the document by agreement between EPA, OEPA, and DOE.

16. Commenting Organization: EPA      Commentor:  
Pg. # 2-3      Section # 2.2.3      Paragraph # 4      Sent./Line #  
Original Comment # 16

**Comment:** Section 2.2.3, Page 2-3, Paragraph 4: Both Tables 2-5 and 2-6 used proposed maximum contaminant levels (PMCLs). In addition, the NCP requires that non-zero maximum contaminant level goals (MCLGS) be used instead of maximum contaminant levels (MCLs). Therefore, PMCLs should also be used in developing the preliminary remediation goals.

**Response:** See the response to EPA comment 1.

**Action:** See the action to EPA comment 1.

17.      **Commenting Organization:** EPA                      **Commentor:**  
          **Pg. # 2-5      Section # 2.2.3                      Paragraph #                      Sent./Line #**  
          **Original Comment # 17**

**Comment:**      **Section 2.2.3, Page 2-5, Table 2-2: The table appears to be missing the Safe Drinking Water Act maximum contaminant level goals for drinking water.**

**Response:**      DOE agrees.

**Action:**      MCLGs (non-zero) were added to the table.

18.      **Commenting Organization:** EPA                      **Commentor:**  
          **Pg. # 2-5      Section #                      Paragraph #                      Sent./Line # Table 2-2**  
          **Original Comment # 18**

**Comment:**      **Table 2-2, Page 2-5. The U.S. EPA memorandum (November 19, 1990) recommending the use of 25 mrem/year as the remediation goal dose limit for all pathways should also be included in this table as a to-be-considered (TBC) guidance. DOE cited this EPA memorandum recommending the use of dose-based remediation goals in its response to previous comments on the ISA report.**

**Response:**      See response to EPA comment 1.

**Action:**      See action for EPA comment 1.

19.      **Commenting Organization:** EPA                      **Commentor:**  
          **Pg. # 2-5      Section # 2.0                      Paragraph #                      Sent./Line # Table 2-2**  
          **Original Comment # 19**

**Comment:**      **Table 2-2, Page 2-5. MCLs are established concentrations and, therefore, the "less than" (<) should be removed for each concentration listed.**

**Response:**      DOE agrees.

**Action:**      Less than sign (<) was removed.

20.      **Commenting Organization:** EPA                      **Commentor:**  
          **Pg. # 2-7      Section # 2.0                      Paragraph #                      Sent./Line # Fig. 2-1**  
          **Original Comment # 20**

**Comment:**      **Figure 2-1, Page 2-7 and 2-8. If U.S. DOE is proposing to use dose-based limits for remedial action objectives, the 25 mrem/year overall exposure dose limit should be used instead of the 100 mrem limit listed in the figure. (U.S. EPA recommended the 25 mrem/year overall exposure dose limit for the remediation goal of the Maxey**

Flats Superfund site.) Similarly, and U.S. EPA memorandum (November 19, 1990) recommended that the dose limit for soils be set at the difference between the 25 mrem/year overall dose limit and the sum of the other individual medium-specific doses. This also would apply to the solid wastes, surface water, and sediment media.

Response: See response to EPA comment 1.

Action: See action for EPA comment 1.

21.	Commenting Organization: EPA Pg. # 2-3      Section # 2.2.5 Original Comment # 21	Commentor: Paragraph # 3	Sent./Line #
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Comment: Section 2.2.5, Page 2-3, Paragraph 3: The cumulative Hazard Index (HI) for all contaminants (not just the individual contaminant) should not exceed 1.

Response: See response to EPA comment 1.

Action: See action for EPA comment 1.

22.	Commenting Organization: EPA Pg. # 2-9      Section # 2.2.5 Original Comment # 22	Commentor: Paragraph # 3	Sent./Line #
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Comment: Section 2.2.5, Page 2-9, Paragraph 3: The site is conducting the remedial actions as part of a CERCLA response; therefore, the governing regulations are those established in the NCP, not in the RCRA regulations.

Response: DOE agrees.

Action: The statement has been revised to reference the NCP.

23.	Commenting Organization: EPA Pg. # 2-9      Section # 2.2.5.1 Original Comment # 23	Commentor: Paragraph # 3	Sent./Line #
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Comment: Section 2.2.5.1, Page 2-9, Paragraph 3: The remedial action objective of restricting exposure to receptors at 100 mrem/year should be used as an upper limit. It should also be noted that the 100 mrem/year dose limit stated in the EPA memo recommending the use of dose limits as remediation goals.

Response: See response to EPA comment 1.

Action: See action for EPA comment 1.

24. Commenting Organization: EPA      Commentor:  
Pg. # 2-10      Section # 2.2.5.4      Paragraph # 4      Sent./Line #  
Original Comment # 24

**Comment:** Section 2.2.5.4, Page 2-10, Paragraph 4: Remedial action objectives (RAOs) for surface water and sediment cannot be based on the same criteria as soil. First, surface water is a liquid and would have different exposure routes and scenarios than soil. Second, sediment would have different exposure scenarios than soils.

**Response:** See response to EPA comment 1.

**Action:** See action for EPA comment 1.

25. Commenting Organization: EPA      Commentor:  
Pg. # 2-11      Section #      Paragraph #      Sent./Line #  
Original Comment # 25

**Comment:** Table 2-3, Page 2-11: Several errors and inconsistencies were noted in this table:

- (A) The reference dose factor (RfD) for acenaphthene is 0.006 mg/kg/d.
- (B) The slope factors (SF) are presented for each aroclor; however, the MCL is presented as the acceptable soil concentration.
- (C) Interim guidance from EPA states that an SF for benzo(a)pyrene of 11.5 (oral ingestion) and 6.1 (inhalation) can be used; in addition, these SFs should be used for all polycyclic aromatic hydrocarbons that have a B2 (probable human carcinogen) classification.
- (D) The RfD presented for a carbon disulfide should result in an acceptable soil concentration of 8,000 mg/kg.
- (E) The RfD for 2,4-dimethylphenol is 0.001 mg/mg/d, resulting in an acceptable soil concentration of 80 mg/kg.
- (F) The RfD for toluene is 0.2 mg/kg/d, resulting in an acceptable soil concentration of 16,000 mg/kg.
- (H) HEAST lists the RfD for cadmium as 0.003 mg/kg/d for food and 0.0005 mg/kg/d for water; please provide a reference for the value 0.0004 used.
- (I) Please provide a reference for Marcus 1986; the Center for Disease Control (CDC) recommends that the limit for lead in soil be set at 0.5 to 1.0 mg/kg.

**Responses:**

- (A) The RfD for acenaphthene was left out of the table and was added; the resulting soil concentration of 4800 mg/kg is correct.
- (B) The MCL for the PCB Aroclors is for total PCBs; the table was corrected to indicate this.
- (C) The PAHs rated as B2 carcinogens that are chemicals of potential concern for OU2 include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(ah)anthracene, and indeno(123-cd)pyrene. The slope factor for BaP of 11.5 (mg/kg/d)<sup>-1</sup> was used for these compounds.
- (D) Agree, the table was corrected to show a RfD for carbon disulfide of 0.1 mg/kg/d resulting in an acceptable soil concentration of 8000 mg/kg.
- (E) According to the 1990 4th quarter HEAST tables, the chronic oral RfD for 2,4-dimethylphenol is 0.02 mg/kg/d, resulting in a soil concentration of 1600 mg/kg. The table is correct.
- (F) Agree, the RfD and resulting soil concentration for toluene was updated.
- (G) Agree, the RfD and resulting soil concentration was updated.
- (H) Table 2-3 was updated to include RfDs (food RfD) to calculate acceptable concentrations for soil ingestion. Table 2-6 was updated by using the PMCL (.005 mg/l) for cadmium.
- (I) The full reference is Marcus, W.L. (1986), "Lead Health Effects in Drinking Water." Toxicology and Industrial Health, 2(4):363-407. This was added to the references.

Action: The actions are contained in the respective response.

26.	Commenting Organization: EPA	Commentor:	
	Pg. # 2-12 Section # 2.0	Paragraph #	Sent./Line # Table 2-4
	Original Comment # 27		

Comment: Table 2-3, Page 2-12: The acceptable soil concentration should be mg/kg not mg/l.

Response: DOE agrees.

Action: The units have been corrected to read mg/kg.

27.	Commenting Organization: EPA	Commentor:	
	Pg. # 2-13 Section # 2.0	Paragraph #	Sent./Line # Table 2-4
	Original Comment # 27		

**Comment:** Table 2-4, Page 2-13: This table should also consider the U.S. EPA's ambient water quality criteria for the protection of human health and adjusted for drinking water (Federal Register, November 28, 1980). The 10E-06 concentrations for specific chemicals are as follows: chlordane, 0.00046 mg/L; chloroform, 0.19 mg/L; tetrachloroethane, 0.8 mg/L; trichloroethene, 2.7 mg/L.

**Response:** Surface water is not considered a drinking water source, as has been discussed in Section 3 of the baseline RA. However, surface water from the Great Miami River is evaluated as a potential source of irrigation water and fish in the baseline RA and therefore, the ambient water quality criteria for consumption of aquatic organisms applies.

**Action:** The Federal Ambient Water Quality Criteria for Protection of Human Health for consumption of aquatic organisms was added to Table 2-4.

28.    **Commenting Organization:** EPA                      **Commentor:**  
       Pg. # 2-14      Section # 2.2.5.5                      Paragraph # 2                      Sent./Line #  
       **Original Comment # 28**

**Comment:** Section 2.2.5.5, Page 2-14, Paragraph 2: As stated previously, the risks (or doses) from contaminants must be summed so that the resultant concentrations do not exceed the upper bound risk or dose-based limit.

**Response:** See response to EPA comment 1.

**Action:** See action for EPA comment 1.

29.    **Commenting Organization:** EPA                      **Commentor:**  
       Pg. # 2-13      Section # 2.0                      Paragraph #                      Sent./Line # Table 2-5, 2-6  
       **Original Comment # 29**

**Comment:** Tables 2-5 and 2-6, Page 2-13: The acceptable soil concentrations in Table 2-3 were established by conservatively assuming that the exposed individual was a 16-Kg child. However, it is not clear why the same conservative assumption was not used in determining the acceptable water concentration. Many of the acceptable water concentrations would be much lower if the same conservative approach was used for ingestion of water as for the ingestion of soils.

**Response:** Disagree, these calculations are based on the "Recommended Exposure Assumptions for Use in Deriving Action Levels (FR Vol. 55 No. 145, July 27, 1990) proposed rule. Using an adult scenario is more conservative than the child scenario for deriving acceptable water concentrations because the exposure duration is 70 years for an adult and only approximately 5 years for a child. (Also, see response to Comment 1.)

**Action:** None required.

30. Commenting Organization: EPA Commentor:  
Pg. # 2-18 Section # Paragraph # Sent./Line # Table 2-7  
Original Comment # 30

**Comment:** Table 2-7, Page 2-18: This table should also present the acceptable water concentration for each radionuclide, which when added with all the radionuclides would not exceed the 4 mrem/year dose limit. In addition, the acceptable concentration resulting in the 1E-06 cancer risk should be presented for each radionuclide. In all cases, these concentrations are significantly lower than those presented in the table.

**Response:** See response to EPA comment 1.

**Action:** See action for EPA comment 1.

31. Commenting Organization: EPA Commentor:  
Pg. # 2-18 Section # Paragraph # Sent./Line # Table 2-7  
Original Comment # 31

**Comment:** Table 2-7, Page 2-18: A similar table should be generated for radionuclides in soils.

**Response:** See response to EPA comment 1.

**Action:** See action for EPA comment 1.

32. Commenting Organization: EPA Commentor:  
Pg. # 2-19 Section # 2.3.4 Paragraph # 4 Sent./Line #  
Original Comment # 32

**Comment:** Section 2.3.4, Page 2-19, Paragraph 4: This section should clearly describe what media will be treated, particularly since the removal/disposal response action is not included here as it was in Table ES-3.

**Response:** DOE disagrees. Section 2.3.4 presents a general description of general response actions, and does not discuss remedial actions in terms of media. However, Section 2.4.1.2 does discuss treatment in terms of media for soils, sediments and solid wastes.

**Action:** None required.

33. Commenting Organization: EPA Commentor:  
Pg. # 2-21 Section # 2.4 Paragraph # 1 Sent./Line #  
Original Comment # 33



**Comment:** Section 2.4, Page 2-21, Paragraph 1: The list of remedial technologies at the top of the page does not include any technologies for removal of groundwater (either from the perched or regional aquifer).

**Response:** DOE agrees; however, extraction of groundwater from the regional aquifer is to be performed under Operable Unit 5 by definition.

**Action:** Perched groundwater removal was added to the list of technologies.

34. **Commenting Organization:** Pg. #2-21 Section #2.4.1.1 Original Comment # 34  
**Commentor:** Paragraph #3 Sent./Line #

**Comment:** Section 2.4.1.1, Page 2-21, Paragraph 3: The no action general response action states that no monitoring or institutional control technologies will be included. However, Section 2.3.2 indicates that institutional controls may be included in the no action alternative. This discrepancy should be reconciled.

**Response:** DOE agrees with the comment. The no action alternative can include monitoring, but not actions such as fencing or deed restrictions (ref. CERCLA Guidance for conducting RI/FS, page 4-7).

**Action:** Sections 2.3.2 and 2.4.1.1 were revised to be consistent with CERCLA Guidance. Tables ES-1 through ES-3 and 3-1 through 3-3 were revised as well. Text in Section 3-1 was also revised to be consistent with CERCLA Guidance.

35. **Commenting Organization:** EPA Pg. # Section # 2.4.1.1 Original Comment # 35  
**Commentor:** Paragraph # Sent./Line # Fig. 2-2 (6,7)

**Comment:** Section 2.4.1.1, Figure 2-2: This figure appears to present conflicting information. One example is on Pages 6 and 7 of the figure, which present several technologies for treating perched groundwater. Before perched groundwater could be treated, it would have to be removed. However, this portion of the table is listed as pertaining to the "containment/treatment" general response action and does not include removal technologies. Therefore, it seems that only in-situ treatment technologies (for groundwater) would be appropriate under the containment/treatment general response action. The table needs to correctly apply general response actions and technologies to each media. Also, Figure 2-2 should address discharge.

**Response:** DOE agrees that some clarification would be helpful; however, removal of groundwater is included in the figure. Figure 2-2 does not address discharge because in Section 2.4.1.1, discharge is considered an ancillary process option and is not carried through the

screening process, but is retained for further consideration in the detailed analysis of alternatives.

**Action:** Figure 2-2 has been revised to divide the subsurface flow control technologies into removal of perched groundwater and containment of perched groundwater. Technologies have been placed under the appropriate response action (containment/treatment actions or removal actions).

36. **Commenting Organization:** EPA **Commentor:**  
**Pg. # 2-34 Section # 2.4.1.1 Paragraph # 2 Sent./Line #**  
**Original Comment # 36**

**Comment:** Section 2.4.1.1, Page 2-34, Paragraph 2: It is not clear why this section does not discuss the subsurface flow control process option listed for containment/treatment general response actions on Page 4 of Table 2-2.

**Response:** See response to previous comment.

**Action:** See Action for EPA Comment #35.

37. **Commenting Organization:** EPA **Commentor:**  
**Pg. # 2-36 Section # 2.4.1.1 Paragraph # 5 Sent./Line #**  
**Original Comment # 37**

**Comment:** Section 2.4.1.1, Page 2-36, Paragraph 5: Other discharge process options, such as discharge to on-site streams or a POTW, should be evaluated. Although these two examples may not be retained for additional screening, they must be justifiably eliminated.

**Response:** The last paragraph of page 2-36 and the first paragraph of page 2-37 discuss discharge. Discharges to Paddys Run represent a variation of discharge technologies discussed, and are not independently evaluated in the ISA. Discharge to a POTW is not considered in any of the ISA Reports received as final by EPA (namely OU 1, 4 and 5).

**Action:** None required.

38. **Commenting Organization:** EPA **Commentor:**  
**Pg. # 2-41 Section # 2.4.1.2 Paragraph # 1 Sent./Line #**  
**Original Comment # 38**

**Comment:** Section 2.4.1.2, Page 2-41, Paragraph 1: The text should clearly indicate whether the

waste stabilization process options for the treatment of residuals are those listed on Page 8 or Page 5 of Figure 2-2.

Response: Page 8 is referred to since treatment residuals will result from an ex situ process.

Action: The text has been clarified.

39. Commenting Organization: EPA Commentor:  
Pg. # 2-41 Section # 2.4.1.2 Paragraph # 1 Sent./Line # Fig. 2-2 (9)  
Original Comment # 39

Comment: Section 2.4.1.2, Page 2-41, Paragraph 1: Page 9 in Figure 2-2 lists biological treatment and volume reduction as potentially applicable treatment technologies for the removal/treatment/disposal general response action but does not discuss these in the text.

Response: DOE agrees.

Action: Text discussing ex situ biological treatment and volume reduction has been added.

40. Commenting Organization: EPA Commentor:  
Pg. # 2-41 Section # 2.4.1.2 Paragraph # 2 Sent./Line #  
Original Comment # 40

Comment: Section 2.4.1.2, Page 2-41, Paragraph 2: This section should describe the difference between the above or below-grade vault and the EDF. Also, temporary storage units should be discussed.

Response: Appendix A discusses On-Property Disposal in greater detail. For the purposes of alternative screening, temporary storage does not warrant a detailed discussion. Temporary storage is necessary for removal alternatives in order to provide a buffer for delivery to on- or off-property disposal sites.

Action: Text was clarified in Section 2.4.1.2.

41. Commenting Organization: EPA Commentor:  
Pg. # 2-43 Section # 2.4.1.3 Paragraph # 5 Sent./Line #  
Original Comment # 41

Comment: Section 2.4.1.3, Page 2-43, Paragraph 5: Neither the text nor Figure 2-2 addresses dust suppressants or containment structures although they are listed as remedial technologies in this paragraph.

**Response:** Containment structures were addressed in the preceding section (soils, waste media, pg 41, on-property disposal), and are included in Figure 2-2. Dust suppressants are not discussed in the text nor shown on Figure 2-2. Dust suppressants are an effective temporary measure for use during excavation or grading (re-contouring) waste; however its long term effectiveness when used alone is suspect.

**Action:** Any reference to dust suppressants was removed from the text.

42.    **Commenting Organization:** EPA                      **Commentor:**  
       **Pg. # 2-45      Section # 2.4.2.1      Paragraph # 1                      Sent./Line #**  
       **Original Comment # 42**

**Comment:**    **Section 2.4.2.1, Page 2-45, Paragraph 1: Since this section of the ISA report relies on Section 2.4.1.1 to present the screening of remedial technologies and process options for ground and surface water, this section should be revised to address the comments for Section 2.4.1.1.**

**Response:**    DOE assumes the reviewer is referring specifically to comments 34-37. Refer to responses to the referenced comments.

**Action:**       Refer to actions for the referenced comments.

43.    **Commenting Organization:** EPA                      **Commentor:**  
       **Pg. # 2-59      Section # 2.4.2.2      Paragraph # 1                      Sent./Line #**  
       **Original Comment # 43**

**Comment:**    **Section 2.4.2.2, Page 2-59, Paragraph 1: Additional justification is required to retain vitrification of removed material. The ISA report stated in earlier sections that the high moisture content of the lime sludge would limit the implementability of this process option.**

**Response:**    DOE agrees. Vitrification is applicable for ex-situ use; however, the material would require drying prior to vitrification to remove moisture. Additives may also be necessary to implement ex-situ vitrification.

**Action:**       Additional justification for retention of ex-situ vitrification has been added to the revised ISA Report.

44.    **Commenting Organization:** EPA                      **Commentor:**  
       **Pg. # 2-74      Section # 2.6.1.2      Paragraph # 4                      Sent./Line #**  
       **Original Comment # 44**

**Comment:** Section 2.6.1.2, Page 2-74, Paragraph 4: Surface water monitoring should be discussed previously if included at this point in the ISA report.

**Response:** DOE agrees.

**Action:** Surface water monitoring has been deleted in Section 2.6.1.2.

45.      **Commenting Organization:** EPA                      **Commentor:**  
             Pg. # 2-83      Section # 2.6.1.3              Paragraph # 3                      Sent./Line #  
             Original Comment # 45

**Comment:** Section 2.6.1.3, Page 2-83, Paragraph 3: Both the text on Page 2-84 and Figure 2-2 indicate that chemical sealants have been retained for further analysis, but are not listed here.

**Response:** DOE agrees. Chemical sealants are discussed on page 2-85, and Figure 2-5. Reference to chemical sealants was inadvertently omitted from the first paragraph in Section 2.6.1.3.

**Action:** Reference to chemical sealants has been added to the ISA Report.

46.      **Commenting Organization:** EPA                      **Commentor:**  
             Pg. # 2-84      Section # 2.6.1.3              Paragraph # 1                      Sent./Line #  
             Original Comment # 46

**Comment:** Section 2.6.1.3, Page 2-84, Paragraph 1: The capital cost is listed in Figure 2-5 (Page 1 of 7) as being low. This seems inappropriate considering that a multimedia cap involves considerably more engineering and construction than the soil base cap, which is listed as having a moderate capital cost.

**Response:** DOE agrees. Soil-based cap should have a low capital cost.

**Action:** The cost estimate has been revised.

47.      **Commenting Organization:** EPA                      **Commentor:**  
             Pg. # 2-84      Section # 2.6.1.4              Paragraph # 3                      Sent./Line #  
             Original Comment # 47

**Comment:** Section 2.6.1.4, Page 2-84, Paragraph 3: The capital cost of each subsurface flow listed in Figure 2-5 (Page 6 of 7) is reported as high. The cost evaluation should compare process options for the same technology so that the relative cost can be reported.

**Response:** DOE agrees. The cost evaluation does compare these costs of separate process options in Figure 2-5. Costs are compared in accordance with CERCLA Guidance for Conducting Feasibility Studies.

**Action:** The cost estimates have been revised.

48. **Commenting Organization:** EPA **Commentor:**  
**Pg. # 2-85 Section # 2.6.1.4 Paragraph # 1 Sent./Line #**  
**Original Comment # 48**

**Comment:** Section 2.6.1.4, Page 2-85, Paragraph 1: Slurry walls and grout curtains are described together as having similar implementability; however, Figure 2-5 (Page 6 of 7) lists slurry walls as being more implementable than grout curtains.

**Response:** DOE agrees.

**Action:** Text on page 85 has been revised to be consistent with Figure 2-5.

48. **Commenting Organization:** EPA **Commentor:**  
**Pg. # 2-87 Section # 2.6.1.5 Paragraph # 7 Sent./Line #**  
**Original Comment # 48**

**Comment:** Section 2.6.1.5, Page 2-87, Paragraph 7: The process options for the physical treatment of water are not included in Figure 2-5 (belt filter press, sedimentation/clarification, dual media filtration). If these are ancillary pre- or post-treatment process option (as stated on Page 2-36), they should be presented in a manner consistent with other ancillary process options. For example, several runoff/runoff control process options considered as ancillary are not discussed in the text but are presented in Figure 2-5; whereas the physical treatment process options listed as ancillary are discussed in the text but not in Figure 2-5.

**Response:** DOE agrees.

**Action:** Text discussing physical treatment has been deleted and relocated to Figure 2-5.

49. **Commenting Organization:** EPA **Commentor:**  
**Pg. # 2-90 Section # 2.6.2.5 Paragraph # 3 Sent./Line #**  
**Original Comment # 49**

**Comment:** Section 2.6.2.5, Page 2-90, Paragraph 3: The capital and O&M costs of each thermal

treatment process option listed in Figure 2-5 (Page 7 of 7) is reported as high. The cost evaluation should compare process options for the same technology so that a relative cost can be reported.

Response: DOE agrees.

Action: The cost estimates have been revised.

50. Commenting Organization: EPA      Commentor:  
Pg. # 2-103      Section # 2.7.2.2      Paragraph # 5      Sent./Line #  
Original Comment # 50

Comment: Section 2.7.2.2, Page 2-103, Paragraph 5: This section presents in-situ stabilization as a remedial technology included in the containment general response action. In-situ stabilization was not included in the containment general response action presented in Section 2.4.2.2 and Page 2 of Figure 2-3. Rather, in-situ stabilization was included in the containment/treatment general response action (Page 4 of Figure 2-3) as well as the containment/treatment general response action (Page 4 of Figure 2-6). In addition, the containment/treatment general response action (which should not include removal) lists several treatment technologies and process options (Page 4 of Figure 2-6) that require removal of perched groundwater. Therefore, only in-situ treatment technologies would seem appropriate under the containment/treatment general response action. The report (both text and figures) needs to take a consistent approach towards what is meant by containment/treatment and containment. The approach should be clearly described in Section 3.

Response: See response to EPA comment 35.

Action: See action for EPA comment 35.

51. Commenting Organization: EPA      Commentor:  
Pg. # 3-1      Section # 3.1      Paragraph # 3      Sent./Line # Fig. 3-1 (12)  
Original Comment # 51

Comment: Section 3.1, Page 3-1, Paragraph 3: Figure 3-1 (page 12 of 12) identifies the temporary storage process option as part of the remedial technology for the two on-site disposal alternatives. Temporary storage was previously screened out for the on-site disposal general response action.

Response: DOE disagrees. Figures 2-2 and 2-5 do not screen out temporary storage for either on- or off-property disposal.

Action: The text has been checked for consistency with figures.

52.      Commenting Organization: EPA                      Commentor:  
             Pg. # 3-44      Section # 3.2.1.2              Paragraph # 2                      Sent./Line #  
             Original Comment # 52

**Comment:**      Section 3.2.1.2, Page 3-44, Paragraph 2: The well point system presented in this section (as shown on Figure 3-5) is proposed to be inside the horizontal extent of the groundwater contamination detected by wells 1035 and 1038. DOE should explain why it is not proposing to remediate the entire contaminant plume. This comment should also be addressed for all subsequent sections of the ISA report that refer to groundwater removal.

**Response:**      Refer to Note 4 on the figure. It explains that the details are conceptual and are for illustrative purposes and are not to scale.

**Action:**          None required.

53.      Commenting Organization: EPA                      Commentor:  
             Pg. # 3-49      Section # 3.2.1.4              Paragraph # 3                      Sent./Line #  
             Original Comment # 53

**Comment:**      Section 3.2.1.4, Page 3-49, Paragraph 3: The text states that both truck and rail transport is retained for further consideration. However, truck transport was screened out in Section 2.

**Response:**      Truck and rail transportation were retained, but rail transport was selected as the representative process option for off-site transportation. DOE does agree that the mention of truck transportation in Section 3 is inappropriate.

**Action:**          Reference to truck transport on page 3-49 was deleted.

54.      Commenting Organization: EPA                      Commentor:  
             Pg. # 3-59      Section # 3.2.1.6              Paragraph # 5                      Sent./Line #  
             Original Comment # 54

**Comment:**      Section 3.2.1.6, Page 3-59, Paragraph 5: The text states that the mixed and hazardous waste from the sanitary landfill would be either treated and packaged for off-site landfill would be either treated and packaged for off-site disposal or packaged and shipped to a permitted treatment, storage, and disposal (TSD) facility. The ISA should clarify whether the TSD facility will be required to treat the landfill materials prior to disposal. If so, the treatment and disposal method should be specified.

**Response:**      If the Sanitary Landfill waste is identified as hazardous, treatment must occur prior to disposal, regardless of whether the treatment is conducted on-site or at an off-site TSD.



For the purposes of the ISA report, it can be assumed that on- or off-site treatment is identical.

Action: References to off-site TSD facilities have been deleted.

55. Commenting Organization: EPA      Commentor:  
Pg. # 3-59      Section # 3.2.1.6      Paragraph # 5      Sent./Line #  
Original Comment # 55

Comment: Section 3.2.1.6, Page 3-59, Paragraph 5: This section should estimate the total volume reduction resulting from incineration because the volume will affect both the off-site transportation and disposal costs. The volume will also affect the cost of shipping untreated waste off-site for treatment and disposal.

Response: Volume reduction estimates for the landfill are difficult because the description of the contents is not clear, as well as volumes of waste placed in the facility. The volume reduction could be estimated by assuming rates of reduction to be similar to MSW. However, for the purposes of cost estimating in the ISA, this level of detail is not necessary, but should be addressed in the detailed analysis.

Action: None required.

56. Commenting Organization: EPA      Commentor:  
Pg. # 3-72      Section # 3.2.3      Paragraph # 1      Sent./Line #  
Original Comment # 56

Comment: Section 3.2.3, Page 3-72, Paragraph 1: It is not clear from the description whether remedial technologies will be applied to surface water and sediment in Paddys Run.

Response: By definition, remediation of Paddys Run is conducted in Operable Unit 5. Any remediation of on-site watercourses conducted as part of Operable Unit 5 would require completion prior to the operations described in the Operable Unit 2 ISA concerning re-routing of surface watercourses.

Action: The response to the comment was acknowledged in the revised text (Section 3.2.3.1).

57. Commenting Organization: EPA      Commentor:  
Pg. # 4-1      Section # 4.1      Paragraph # 1      Sent./Line #  
Original Comment # 57

Comment: Section 4.1, Page 4-1, Paragraph 1: The text states that the alternatives are refined further with respect to the size and configuration of extraction or treatment systems, flow rates, and special requirements, among others. However, the ISA report does not present any additional refinement of alternatives.

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Response: DOE agrees.

Action: The statement has been deleted.

## OHIO EPA COMMENTS ON REVISED OU2 I.S.A REPORT

Comments on the Revised Initial Screening of Alternatives

**PLEASE NOTE: REFERENCES TO OTHER OEPA COMMENTS ARE NOTED THUS: "SEE COMMENT XX". REFERENCES TO COMMENTS MADE BY US EPA REGION V ARE NOTED THUS: "SEE EPA COMMENT YY". REFERENCES TO COMMENTS BY OEPA ON DOE RESPONSES TO THE OEPA COMMENTS ON THE DRAFT ISA 0212-4 (SEPTEMBER 1990) ARE NOTED THUS: "SEE THE RESPONSE TO COMMENT ZZ OF THE COMMENTS ON DOE RESPONSES TO OEPA COMMENTS"**

- |    |   |                           |              |
|----|---|---------------------------|--------------|
| 1. | Commenting Organization: OEPA<br>Pg. #                      Section #<br>Original Comment # 1 | Commentor:<br>Paragraph # | Sent./Line # |
|----|---|---------------------------|--------------|
- Comment:**      Tables ES-1, ES-2, and ES-3: The technology type "Physical Waste Treatment" was not chosen in any of the alternatives for any of the three waste units although from examining later chapters, it appears that Alternatives 4 and 5 include some form of physical treatment. These tables should be corrected to indicate which alternatives will involve some form of physical waste treatment.
- Response:**      As shown in Figures 2-2 through 2-7, physical waste treatment and thermal waste treatment technologies were retained for consideration during alternative development. As indicated in Figures 3-1 through 3-3, physical waste treatment (soil washing) was not chosen as a technology associated with the removal/waste treatment alternatives. Thermal treatment (Sanitary Landfill) and waste stabilization (Lime Sludge Ponds, Fly Ash/Southfield Areas) were chosen as treatment technologies.
- Action:**            No action required.
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- |    |   |                           |              |
|----|---|---------------------------|--------------|
| 2. | Commenting Organization: OEPA<br>Pg. #                      Section #<br>Original Comment # 2 | Commentor:<br>Paragraph # | Sent./Line # |
|----|---|---------------------------|--------------|
- Comment:**      Table ES-1, ES-2, ES-3, Off-site Disposal Alternatives: DOE should provide justification as to why the Access Restriction technology type will be employed for off-site disposal alternatives (Alternatives 4 & 6) for the Sanitary Landfill but will not be employed for the off-site disposal alternatives for the Lime Sludge Ponds (Alt-4) and the Fly Ash/Southfield Areas (Alts. 4 & 6).
- Response:**      Tables ES-1, ES-2, ES-3 and subsequently Tables 3-1, 3-2, and 3-3 inadvertently indicate access restrictions will accompany off-site disposal alternatives.
- Action:**            Tables ES-1 and 3-1 have been revised to delete access restrictions for off-site disposal alternatives.

3.      Commenting Organization: OEPA      Commentor:  
Pg. # 1-19    Section # 1.5.3.2      Paragraph # 1      Sent./Line #  
Original Comment # 3

**Comment:**      Section 1.5.3.2, Page 1-19, First Paragraph: The last sentence states that the lime sludge within the ponds and the perched groundwater beneath the ponds were most likely contaminated by uranium emanating from beneath the production area through the continuous sand lens. Given that the north pond contains 1-7 feet of standing water, a groundwater mound may exist in the vicinity of the Lime Sludge Ponds. If a groundwater mound exists, flow through the sand lens from the production area would then diverge around the groundwater mound. Detailed hydrogeologic data is not included in the Task 12 Report to refute this condition. Therefore, uranium emanating from the production area may not be the source of contaminants in the lime sludge ponds and the perched groundwater beneath the ponds.

**Response:**      DOE agrees. Uranium concentrations measured in the 1000-Series wells near the Lime Sludge Ponds suggest the presence of a groundwater mound. Near background levels of uranium that exist within the waste and periphery of the groundwater mound can be attributed to uranium inherent to sludges from the neutralization of coal pile stormwater runoff that were pumped into the Lime Sludge Ponds.

**Action:**      Section 1.5.3.2 has been revised to discuss other sources of uranium contamination applicable to the Lime Sludge Ponds and perched groundwater beneath the ponds.

4.      Commenting Organization: OEPA      Commentor:  
Pg. # 1-19    Section #      Paragraph # 3      Sent./Line #  
Original Comment # 4

**Comment:**      Page 1-19, third paragraph: This paragraph fails to reflect the full context provided by USEPA's Risk Assessment Guidance for Superfund, Volume I (1989). The guidance states (pg. 5-23), "In general, only essential nutrients present at low concentrations (i.e., only slightly elevated above background) should be eliminated to help ensure that chemicals present at potentially toxic concentrations are evaluated in the quantitative risk assessment." Therefore, the statements made by DOE in this paragraph are misleading. Whether these nutrients are to be included in the risk assessment should be based on concentrations found in relation to background. DOE must provide these contaminant levels and justification, based on background levels, for their failure to include these in the risk assessment.

**Response:**      See the response to comment 7 of the Comments on DOE Responses to OEPA Comments.

**Action:**      No action required.

5. Commenting Organization: OEPA Commentor:  
Pg. # 1-19 Section # 1.5.3.3 Paragraph # Sent./Line #  
Original Comment # 5

**Comment:** Page 1-19, Section 1.5.3.3: The first sentence appears to suggest that samples of the active fly ash pile material were analyzed for only 2 metals, barium and chromium. Please clarify if this is indeed the case since other heavy metals are likely to be present in fly ash other than barium and chromium.

**Response:** The only source information available for the Active Fly Ash Pile are data gathered during the DOE Environmental Survey. No borings were placed within the Active Fly Ash Pile during the Weston CIS. As clearly stated in Section 1.5.3.3, neither inorganic nor PCB analyses were performed on samples taken in the Active Fly Ash Pile, and that analyses for inorganic and PCB constituents will be performed on additional samples collected. Obviously other heavy metals exist in fly ash. The additional sampling called for in the Work Plan Addendum will provide additional characterization data which will determine the existence of PCBs to verify past practices of spraying contaminated waste oils for dust control, as well to determine the existence of high concentrations of inorganics and other chemicals.

**Action:** No action required.

6. Commenting Organization: OEPA Commentor:  
Pg. # 1-22 Section # 1.5.3.5 Paragraph # Sent./Line #  
Original Comment # 6

**Comment:** Page 1-22, 1.5.3-5, General: This section fails to discuss any sampling of surface water or sediments to determine possible routes of contaminant migration from the Southfield Area. Surface water and sediment sampling were discussed for several of the other waste units in this ISA. Migration pathways for the Southfield area need to be analyzed in order to properly perform the baseline risk assessment.

**Response:** No surface water or sediment sampling locations exist in the vicinity of the Southfield. As indicated in the Baseline Risk Assessment, surface water and sediment exposure pathways applicable to the Southfield were not evaluated due to dense vegetative cover, which would prevent the potential for significant erosion of the cover soil. Additional surface water and sediment sampling was not proposed in the vicinity of the Southfield based on this rationale. In addition, the MUSLE was used to estimate transport of sediment from these areas.

**Action:** No action required.

7. Commenting Organization: OEPA Commentor:  
Pg. # 1-22 Section # 1.5.3.5 Paragraph # 1 Sent./Line #  
Original Comment # 7

**Comment:** Page 1-22, Section 1.5-3.5, first paragraph: Cesium-137 should be included in the list of chemicals and radionuclides presented in this paragraph, since it is included in Table C-5 of Appendix C as a contaminant detected above background. According to the Risk Assessment Guidance for Superfund, Volume I (1989), the list of chemicals of potential concern should include chemicals detected in at least one sample found at above background concentrations in a given medium.

**Response:** DOE disagrees. Cesium 137 was eliminated from consideration as a chemical of potential concern in the baseline risk assessment due to its single detection in Operable Unit 2 samples at levels close to its minimum detectable concentration. Cesium was detected in less than 10% of samples in a particular medium and thus was eliminated from consideration as chemical of potential concern which is consistent with the Human Health Evaluation Manual.

**Action:** None required.

8.      **Commenting Organization:** OEPA                      **Commentor:**  
          Pg. # 1-23      Section # 1.5.4.2      Paragraph #                      Sent./Line #  
          Original Comment # 8

**Comment:** Page 1-23, Section 1.5.4.2, Future Land-Use Conditions Groundwater: A decrease in the source term from the arithmetic mean plus two standard deviations to only the arithmetic mean does not remedy the uncertainties associated with the model parameters. Because there are model parameter uncertainties, it may be more appropriate to utilize a more conservative source term, rather than a decreased source term.

**Response:** By mutual agreement between EPA, OEPA, and DOE on a phone call held March 27, 1991, Sections 1.5.4 and 1.5.5 were deleted from the Final ISA Report.

**Action:** As noted in response.

9.      **Commenting Organization:** OEPA                      **Commentor:**  
          Pg. # 1-23      Section # 1.5.4.2      Paragraph # last                      Sent./Line #  
          Original Comment # 9

**Comment:** Page 1-23, section 1.5.4.2, last paragraph: The first sentence of this paragraph conflicts with the description and map of the Inactive Fly Ash Disposal Area presented in section 1.5.2.4. The previous section describes this area as "with little soil or vegetation cover" and Figure 1-5 would suggest by the contour lines that a "gentle slope" does not exist over the whole area. This would also indicate that erosion is a migration pathway for contaminants in the Inactive Fly Ash Disposal Area. Uranium, Radium-226, and Radium-228 were detected in sediment samples adjacent to the Inactive Fly Ash Disposal Area, indicating it "is a possible source of contamination to adjacent sediments." For these reasons, the chemicals and

radionuclides from the Inactive Fly Ash Disposal Area should be included with those from the Active Fly Ash Pile for evaluation of transport in surface water under current and future land-use conditions in the baseline risk assessment.

Response: See response to OEPA comment 8.

Action: See action for OEPA comment 8.

10.	Commenting Organization: OEPA Pg. # 1-24    Section # Original Comment # 10	Commentor: Paragraph # 1st full	Sent./Line #
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**Comment:** Page 1-24, first full paragraph: The statements made concerning the future of the Active Fly Ash Pile are questionable at best. Little vegetative cover exists on the Inactive Fly Ash Disposal Area, which was last used in 1968, calling into question DOE's statement that erosion should cease with time because of settling and growth of natural vegetation (see preceding Comment #9). It is likely that chemicals will continue to be introduced into the surface water, both now, and under future land-use conditions.

Response: See response to OEPA comment 8.

Action: See action for OEPA comment 8.

11.	Commenting Organization: OEPA Pg. # 1-24    Section # 1.5.4.2 Original Comment # 11	Commentor: Paragraph #	Sent./Line #
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**Comment:** Page 24, Section 1.5.4.2, Current Land-Use Conditions Surface Water: A more conservative approach would include some surface water runoff from the sanitary Landfill, Inactive Fly Ash Disposal Area, Lime Sludge Ponds and the South Field in addition to the active fly ash pile. Section 1.5.3.1, page 1-18 indicates that surface water runoff is present at the sanitary landfill.

Response: See response to OEPA comment 8.

Action: See action for OEPA comment 8.

12.	Commenting Organization: OEPA Pg. # 1-24    Section # Original Comment # 12	Commentor: Paragraph # last	Sent./Line #
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**Comment:** Page 1-24, last paragraph: DOE should provide further justification for not calculating risk associated with lead in the surface water under current land-use conditions. Lead was detected at 0.036 ppm in surface water adjacent to the Active Fly Ash Pile.

**Response:** See response to OEPA comment 8.

**Action:** See action for OEPA comment 8.

13.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> 1-25 <b>Section #</b> <b>Original Comment #</b> 13	<b>Commentor:</b> <b>Paragraph #</b> 1 & 3	<b>Sent./Line #</b>
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**Comment:** Page 1-25, first and third paragraphs: DOE should refrain from using dose-based exposure levels in lieu of risk-based levels associated with exposure pathways at the site for consistency with the NCP. In the third paragraph, DOE needs to elaborate on what is considered relatively low intake concentrations for nonradioactive chemicals as discussed in this paragraph.

**Response:** By mutual agreement between EPA, OEPA, and DOE on a phone call held March 27, 1991, sections 1.5.4 and 1.5.5 have been deleted from the Final OU 2 ISA report.

**Action:** Sections 1.5.4 and 1.5.5 have been deleted from the report.

14.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> 1-28 <b>Section #</b> <b>Original Comment #</b> 14	<b>Commentor:</b> <b>Paragraph #</b>	<b>Sent./Line #</b>
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**Comment:** Page 1-28: It is unclear how the carcinogenic risks presented on this page were calculated. Calculations must be risk-based, not dose-based.

**Response:** See OEPA comment 8 response.

**Action:** See OEPA comment 8.

15.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> 2-2 <b>Section #</b> <b>Original Comment #</b> 15	<b>Commentor:</b> <b>Paragraph #</b> 1	<b>Sent./Line #</b>
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**Comment:** Page 2-2, first paragraph: DOE's statement that "where ARARs or TBCs are not available, preliminary remediation goals will be developed based on a  $1 \times 10^{-6}$  risk level" is inconsistent with the NCP. TBCs do not determine when the  $10^{-6}$  risk level is to be used. The NCP states: "The  $10^{-6}$  risk level shall be used as the point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure." (emphasis added) TBCs have nothing to do with determining when the use of a  $10^{-6}$  cancer risk is appropriate. The ISA report should be corrected accordingly.

**Response:** See response to EPA comment 1.

**Action:** See action for EPA comment 1.

16.	Commenting Organization: OEPA Pg. # 2-3      Section # 2.2.3 and 2.2.4 Original Comment # 16	Commentor: Paragraph #	Sent./Line #
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**Comment:** Page 2-3, Sections 2.2.3 and 2.2.4: The second paragraph in Section 2.2.3 states that when both an MCL and proposed MCL exist for a constituent, "the MCL is used to develop the RAO." The "Final" ISA for OU-1 uses the PMCL to develop the RAO, assuming the proposed MCL will be promulgated soon. This demonstrates inconsistency between DOE documents. Further, and as mentioned by OEPA in previous ISA comment letters, for any and all carcinogenic compounds detected in OU-2 groundwater that do not have final MCLs (i.e., only a proposed MCL exists which would, therefore, not constitute an ARAR, but only a TBC), DOE must consider the remedial action objective (RAO) to be the  $10^{-6}$  cancer risk level. Likewise, for noncarcinogenic compounds having only a proposed MCL, the appropriate RfD must be used to derive an ingestion RAO instead of the proposed MCL. In addition, for those compounds (both carcinogens and noncarcinogens) that have a non-zero MCLG, this MCLG must be considered as an RAO unless there exists a risk-based value that is lower than the MCLG, in which case the lower risk-based number should be considered the RAO.

**Response:** There was a typographical error in the text. PMCLs are use to develop RAOs when both a MCL and a PMCL exist for a chemical. For additional discussion on the development of RAOs, see EPA comment 1.

**Action:** The text has been revised to correct the typographical error.

17.	Commenting Organization: OEPA Pg. # 2-4      Section # Original Comment # 17	Commentor: Paragraph #	Sent./Line #
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**Comment:** Page 2-4, Table 2-1: Please provide justification for not including PCB's and Cesium-137 as chemicals and radionuclides of potential concern for OU-2 since both were detected in OU-2 media.

**Response:** Cesium was eliminated from consideration as a chemical of potential concern in the baseline risk assessment due to its single detection in Operable Unit samples, which represents less than 10 percent in a particular medium. Therefore, Cesium was eliminated which is consistent with the Human Health Evaluation Manual. PCBs (i.e Aroclors) were included as chemicals of potential concern in the table.

**Action:** PCB's have been added to Table 2-1.

18.	Commenting Organization: OEPA Pg. # 2-5      Section # Original Comment # 18	Commentor: Paragraph #	Sent./Line #
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**Comment:** Page 2-5, Table 2-2: Under the last column "Chemicals in Drinking Water", no MCLGs are listed. This oversight should be corrected.

**Response:** DOE agrees.

**Action:** MCLGs have been added to the table.

19.	Commenting Organization: OEPA Pg. # 2-6      Section # Original Comment # 19	Commentor: Paragraph #	Sent./Line #
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**Comment:** Page 2-6, Table 2-2: State of Ohio surface water quality standards must be included in this table. State standards constitute ARARs and those standards for cadmium and PCBs 0.6 µg/l and 0.001, respectively) are more stringent than those federal criteria listed here. For the column titled "Chemicals in Surface Water," the referenced regulation is 40 CFR 141. This regulation pertains to primary drinking water standards not to chemicals in surface water for aquatic life protection. Therefore, the citation to this regulation should be deleted or a correct citation inserted.

**Response:** DOE agrees that state standards should be referenced and used whenever the state standard is more restrictive.

**Action:** This change has been incorporated into the text.

20.    Commenting Organization: OEPA                      Commentor:  
        Pg. # 2-9        Section #                      Paragraph #                      Sent./Line #  
        Original Comment # 20

**Comment:**    Page 2-9 fourth bullet: The NCP does not consider the  $10^{-4}$  to  $10^{-6}$  risk range to necessarily constitute an acceptable level of risk for carcinogens. The NCP also requires the use of a  $10^{-6}$  risk as the point of departure for determining acceptable risks. The text here needs to be revised appropriately to reflect this.

**Response:**    See response to EPA comment 1.

**Action:**        See action for EPA comment 1.

21.    Commenting Organization: OEPA                      Commentor:  
        Pg. # 2-9        Section # 2.2.5                      Paragraph # 2                      Sent./Line #  
        Original Comment # 21

**Comment:**    Page 2-9, Section 2.2.5, second paragraph: See Comment #5 in the above DOE Response to Ohio EPA Comments section regarding RCRA Subpart S proposed rules.

**Response:**    See response to EPA comment 1.

**Action:**        See action for EPA comment 1; also, reference to proposed RCRA subpart S has been dropped.

22.    Commenting Organization: OEPA                      Commentor:  
        Pg. # 2-9        Section # 2.2.5.1                      Paragraph #                      Sent./Line #  
        Original Comment # 22

**Comment:**    Page 2-9, Section 2.2.5.1: As previously stated, remediation goals should be risk-based utilizing both IRIS and HEAST. It must also be recognized that risk-based criteria also constitute TBCs just as DOE Order 5400.5 does. The last sentence is confusing and should be corrected to read: It should be noted that direct radiation does not contribute measurably to dose."

**Response:**    See the response to EPA comment 1 for a discussion of RAO development. "Direct reduction" is a typographical error.

**Action:**        The statement has been deleted.

23. Commenting Organization: OEPA Commentor:  
Pg. # 2-10 Section # 2.2.5.3 Paragraph # Sent./Line #  
Original Comment # 23

**Comment:** Page 2-10, Section 2.2.5.3: Ohio EPA maintains that risk-based RAOs should be developed for radionuclides as required by CERCLA and the NCP.

**Response:** See response to EPA comment 1.

**Action:** See action for EPA comment 1.

24. Commenting Organization: OEPA Commentor:  
Pg. # 2-10 Section # 2.2.5.3 Paragraph # 2 Sent./Line #  
Original Comment # 24

**Comment:** Page 2-10, Section 2.2.5.3, second paragraph: Ohio EPA's surface water quality standards must also be mentioned here. Ohio's standards are enforceable goals for protection of the environment.

**Response:** See the response to comment 19.

**Action:** See comment 19.

25. Commenting Organization: OEPA Commentor:  
Pg. # 2-11 Section # Paragraph # Sent./Line #  
Original Comment # 25

**Comment:** Page 2-11, Table 2-3, Basis for Remedial Objective: The RfD for Acenaphthene (0-06 mg/kg/d) was not included in the table even though an "Acceptable Soil Concentration" was derived. In addition, the units for the RfD given for 2-butanone appear to be incorrect. The units should be mg/kg/d.

**Response:** DOE agrees.

**Action:** The RfD for acenaphthene was left out of the table and has been added; the resulting soil concentration of 4800 mg/kg is correct. The units for the 2-butanone RfD have been corrected to read mg/kg/d.

26. Commenting Organization: OEPA Commentor:  
Pg. # 2-12 Section # Paragraph # Sent./Line #  
Original Comment # 26

**Comment:** Page 2-12, Table 2-3: Again, the RfDs for lead and mercury should be in mg/kg/d, not mg/kd/d. Footnote "b" should be removed from the table since it is no longer used. It would also be helpful to define "RfD" and "SF". Reference to "CPF" for the compound N-nitrosodiphenylamine should be changed to "SF". With regard to Footnote "a," exposure scenarios used should be based on USEPA's Risk Assessment Guidance for Superfund document, not on the proposed RCRA Subpart S regulations for reasons previously stated. With regard to Footnote "c," the reference "Marcus, 1986" should be included in the references chapter.

**Response:** DOE agrees to the editorial corrections in the table. With regard to footnote "a", see the response to EPA Comment 1.

**Action:** The units will be corrected to read mg/kg/d. Footnote "b" has been deleted from the table. A short definition of RfD and SF will be added to the table. Reference to "CPF" for N-nitrosodiphenylamine will be changed to "SF". The reference for Marcus, 1986 has been added to the Reference Section.

27.	Commenting Organization: OEPA Pg. # 2-13      Section # Original Comment # 27	Commentor: Paragraph #	Sent./Line #
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**Comment:** Page 2-13, Table 2-4: See Comment #12 in the Response to Comments section above.

**Response:** Comment 27 and comment 12 of the Response to Comments are not related.

**Action:** No action required.

28.	Commenting Organization: OEPA Pg. # 2-14      Section # Original Comment # 28	Commentor: Paragraph # 1	Sent./Line #
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**Comment:** Page 2-14, first paragraph: See Comment #16 of Ohio EPA's comments on the revised ISA.

**Response:** See the response to EPA comment 1.

**Action:** See the action to EPA comment 1.

29.	Commenting Organization: OEPA Pg. # 2-14      Section # Original Comment # 29	Commentor: Paragraph # 2	Sent./Line #
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**Comment:** Page 2-14, second paragraph: An acceptable concentration for uranium in groundwater will be based upon the baseline risk assessment and should not be assumed to be 20 pCi/l. As has been noted numerous times by Ohio EPA in comments on ISA reports for other operable units, 20 pci/l represents a lifetime

cancer risk of  $2 \times 10^{-4}$  which is outside the  $10^{-4}$  to  $10^{-6}$  risk range specified in the NCP. It is also two orders of magnitude above the  $10^{-6}$  risk level which the NCP states should be used as the point of departure for determining remediation goals when ARARs are not available or are not sufficiently protective. Exposure levels must be calculated based upon risk, not dose.

Response: See response to EPA comment 1.

Action: See action for EPA comment 1.

30.	Commenting Organization: OEPA	Commentor:	
	Pg. # 2-14      Section #	Paragraph # 3	Sent./Line #
	Original Comment # 30		

Comment: Page 2-14, third paragraph: According to the reference chapter, "ASI/IT 1990" is not the draft RI report. Please provide a correct reference.

Response: DOE agrees.

Action: Reference to draft RI report had been deleted throughout the document. "Results of field investigation" has been substituted in it's place. In this particular case, the text containing the reference to the RI report has been deleted due to a response to another comment.

31.	Commenting Organization: OEPA	Commentor:	
	Pg. # 2-15      Section #	Paragraph #	Sent./Line #
	Original Comment # 31		

Comment: Page 2-15, Table 2-5: DOE needs to correct Table 2-5 so that it shows the Acceptable Water Concentration for all PCBs combined which is 0.0005 mg/l. In its present form, the table suggests that 0.0005 mg/l is the Acceptable Water Concentration for each Aroclor.

The revised ISA report still fails to recognize those compounds listed in Table 2-5 that have both Reference Doses (RfD) and cancer Slope Factors (SF) which should be used to derive separate non-carcinogenic and carcinogenic groundwater RAOs. These compounds include Bis (2-ethylhexyl) phthalate, Chlordane, 1,1-Dichloroethane, Methylene Chloride, and Tetrachloroethene. In lieu of a final MCL for these compounds, a carcinogenic and non-carcinogenic RAO must be calculated for each compound and the table modified accordingly. Also, the RfD of  $0.091 \text{ (mg/kg/d)}^{-1}$  for 1,1-Dichloroethane is in fact the cancer Slope Factor. The RfD for this chemical is 0.1 mg/kg/d. This error should be corrected and both the RfD and SF included as indicated in previous comments on this and other compounds in the table. For Chloroform, it should be noted in the table that the RAO for this compound is the SF.

**Response:** DOE agrees to the editorial corrections in the table with respect to RAOs. See the response to EPA Comment 1 concerning RAO development.

**Action:** Table 2-5 has been corrected to indicate that the acceptable water concentration for PCB Aroclors is for total PCBs. Also, the RfD and SF for 1, 1-dichloroethane have been corrected. The acceptable water concentrations shown in the table represent the lowest concentration, when both RfDs and SFs are available for a given chemical. A note to this effect has been added to the table.

32.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> 2-18 <b>Section #</b> <b>Original Comment #</b> 32	<b>Commentor:</b> <b>Paragraph #</b>	<b>Sent./Line #</b>
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**Comment:** Page 2-18, Table 2-7: DOE needs to correct this table so that states that the RAO for radium in drinking water is 5 pci/l for combined Ra-226 and Ra-228. At present, the table erroneously suggests the level for each is 5 pci/l for a total acceptable Radium concentration of 10 pci/l. This table should also provide the 10-6 risk-based criteria for drinking water for those radionuclides listed. The drinking water concentration corresponding to 4 mrem/yr exposure for Sr-90 was omitted. This value is 38.6 pci/l.

**Response:** DOE agrees with the comment concerning the need to combine Ra-226 and Ra-228 concentrations and add the value for Sr-90. The value of 5 pCi/l for radium in drinking water is a promulgated regulation and is appropriate for use in establishing preliminary RAOs in lieu of a risk-based concentration. See EPA comment 1 for a further discussion of RAO development.

**Action:** The table has been changed to indicate the maximum concentration for radium is 5 pCi/l for Ra-226 and Ra-228 combined and add the value for Sr-90.

33.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> 2-19 <b>Section #</b> 2.3.4 <b>Original Comment #</b> 33	<b>Commentor:</b> <b>Paragraph #</b>	<b>Sent./Line #</b>
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**Comment:** Page 2-19, Section 2.3.4: No "Containment With Treatment" options are included for the Sanitary Landfill, since no in-place treatment options are practical due to the heterogeneity of the material. Therefore, reference to the Sanitary Landfill should be removed from this paragraph.

**Response:** DOE agrees.

**Action:** Reference to the Sanitary Landfill has been deleted from Section 2.3.4.

34.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> 2-20 <b>Section #</b> 2.4 <b>Original Comment #</b> 34	<b>Commentor:</b> <b>Paragraph #</b>	<b>Sent./Line #</b>
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**Comment:** Page 2-20, Section 2.4: The following technologies included in Figures 2-2, 2-3, and 2-4 should be added to the list of technologies on page 2-21: perched groundwater/wastewater treatment, subsurface flow control, in situ waste treatment, waste stabilization, biological treatment. Sludge treatment is included on page 2-21, but is not included in Figures 2-2, 2-3, and 2-4.

**Response:** DOE agrees.

**Action:** Perched groundwater/wastewater treatment, waste stabilization, and biological treatment, have been added to the list of technologies on Page 2-21. Sludge treatment has been deleted from the list of technologies on Page 2-21. Subsurface flow control has been deleted from the figures and replaced with "perched groundwater removal" and "subsurface containment". These two technologies have been added to the list of technologies.

35.	Commenting Organization: OEPA	Commentor:	
	Pg. #                      Section #	Paragraph #	Sent./Line #
	Original Comment # 35		

**Comment:** Figure 2-2, Containment/Treatment - Subsurface Flow Control: To be consistent with the text and to avoid confusion, steel pilings should be changed to sheet pilings.

**Response:** DOE agrees.

**Action:** Figures 2-2 through 2-4, and Figures 3-1 through 3-3 have been revised to change "steel pilings" to "sheet piles."

36.	Commenting Organization: OEPA	Commentor:	
	Pg. #                      Section # 2.4.1	Paragraph #	Sent./Line #
	Original Comment # 36		

**Comment:** Section 2.4.1: The Removal/Treatment/Disposal remedial technologies: waste stabilization, volume reduction and biological treatment are presented in Figure 2-2, but are not discussed in the text. These biological treatment process options mitigate organics and were retained. However the perched groundwater/wastewater treatment process options that mitigate organics were screened out.

**Response:** Waste stabilization and biological treatment are applicable to the soil/sediment/waste media, and are discussed under the heading "Ex Situ Treatment." Volume reduction is considered an ancillary technology, and volume reduction process options were not carried through the evaluation of process options and assembly of alternatives, but will be included during the detailed analysis of alternatives as necessary for the complete conceptual, costing, and evaluation of removal/treatment/disposal alternatives.



As discussed on Page 2-36, uranium is most prevalent in the perched groundwater, and only technologies applicable for uranium removal were used in the initial screening and development of alternatives. Although organics were detected in the source, they were not detected in the perched groundwater beneath the source. This is discussed in Section 1.5.3.1.

**Action:** Section 2.4.1.2 has been revised to indicate compaction and shredding are ancillary process options, and that further discussions pertaining to these process options will not be pursued. Biological treatment and waste stabilization applicable to soil/sediment/waste media have been added to the Ex situ treatment section.

37.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> 2-42 <b>Section #</b> <b>Original Comment #</b> 37	<b>Commentor:</b> <b>Paragraph #</b>  <b>Sent./Line #</b>
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**Comment:** Page 2-42, Ohio ARARS: This list must include the Ohio Water Pollution Control Law (ORC 6111), which provides for the protection of state waters from contamination.

**Response:** ORC 6111 is listed on Appendix B on page B-5.

**Action:** Reference to ORC 6111 has been included in the revised text.

38.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> 2-45 <b>Section #</b> 2.4.2 <b>Original Comment #</b> 38	<b>Commentor:</b> <b>Paragraph #</b>  <b>Sent./Line #</b>
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**Comment:** Page 2-45, Section 2.4.2: The Removal/Treatment/Disposal remedial technology volume reduction is presented in Figure 2-3, but is not discussed in the text.

**Response:** DOE agrees.

**Action:** The text has been revised to indicate that the technologies (compaction and shredding) for volume reduction are not viable for the Lime Sludge Ponds due to the waste being a homogeneous, high moisture sludge. Also, the text has been revised to indicate that the technologies for physical wastewater treatment (belt filter press, sedimentation/clarification, and media filtration) could be used to remove moisture from the lime sludge, which would effect volume reduction.

39.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> <b>Section #</b> <b>Original Comment #</b> 39	<b>Commentor:</b> <b>Paragraph #</b>  <b>Sent./Line #</b>
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**Comment:** Figure 2-4: The screening comments given for the in-situ vitrification process option

suggests that fires are a concern if this process option would be utilized for the fly ash areas and the South Field area. Given that the great majority of this material is ash and construction rubble (bricks, concrete, etc.), it is not clear why DOE considers fire to be a likely hazard for these areas.

**Response:** The screening comment for in situ vitrification in Figure 2-4 indicates fire is a concern only for the heterogeneous wastes in the Southfield. The screening comment makes no reference to the Fly Ash areas being a fire hazard. DOE does agree that the Southfield does not pose a significant threat with regard to fires.

**Action:** Reference to fires has been deleted.

40.	Commenting Organization: OEPA Pg. # 2-71      Section # 2.4.3.2 Original Comment # 40	Commentor: Paragraph #	Sent./Line #
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**Comment:** Page 2-71, Section 2.4.3.2, ex situ treatment: The first sentence states that biological treatment technologies are included, however, biological treatment methods are not discussed in the text or presented in Figure 2-4.

**Response:** DOE agrees. Since the Fly Ash/Southfield areas contain insignificant amounts of organics, as discussed in Sections 1.5.3.3 through 1.5.3.5, the biological treatment technology was not considered.

**Action:** Text has been revised on Page 2-71 to eliminate reference to biological treatment.

41.	Commenting Organization: OEPA Pg. #              Section # 2.4.3.2 Original Comment # 41	Commentor: Paragraph #	Sent./Line #
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**Comment:** Section 2.4.3.2: The Removal/Treatment/Disposal technology: volume reduction was included in Figure 2-4, but not discussed in the text.

**Response:** See response to comment No. 36.

**Action:** Reference comment No. 36.

42.	Commenting Organization: OEPA Pg. #              Section # Original Comment # 42	Commentor: Paragraph #	Sent./Line #
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**Comment:** Figure 2-5, Removal/Treatment/Disposal, Perched Groundwater/Wastewater

**Treatment:** The ion exchange process option should be included as a chemical remedial technology rather than physicochemical.

**Response:** DOE agrees.

**Action:** The word "physicochemical" has been changed to "chemical" for ion exchange in all applicable figures and text, in order to remain consistent throughout the document.

43.	Commenting Organization: OEPA	Commentor:	
	Pg. #                      Section #	Paragraph #	Sent./Line #
	Original Comment # 43		

**Comment:** Figure 2-5, Removal/Treatment/Disposal, Biological Treatment: The permeable treatment process option listed in Figure 2-2 is not included in Figure 2-5.

**Response:** DOE agrees. The permeable treatment process options was inadvertently left off Figure 2-5.

**Action:** Figure 2-5 has been revised to include permeable treatment.

44.	Commenting Organization: OEPA	Commentor:	
	Pg. # 2-84              Section #	Paragraph #	Sent./Line #
	Original Comment # 44		

**Comment:** Page 2-84, Chemical Sealants, Implementability: The sentence starting "A multimedia cap..." should be the beginning of a new paragraph as it is intended to be a summary of the process options which were evaluated for the sanitary landfill and not intended to apply solely to the evaluation of chemical sealants.

**Response:** DOE agrees.

**Action:** Text has been revised accordingly.

45.	Commenting Organization: OEPA	Commentor:	
	Pg. # 2-92              Section #	Paragraph #	Sent./Line #
	Original Comment # 45		

**Comment:** Page 2-92, Vitrification, Effectiveness: In the last sentence, the word "gages" should be "gases."

**Response:** DOE agrees.

**Action:** Text has been revised accordingly.

46. Commenting Organization: OEPA Commentor:  
 Pg. # Section # Paragraph # Sent./Line #  
 Original Comment # 46

**Comment:** Figures 3-1, 3-2, 3-3: See Comments #1 and #2 above.

**Response:** See response to comments no. 1 and 2.

**Action:** Reference comments 1 and 2.

47. Commenting Organization: OEPA Commentor:  
 Pg. # Section # Paragraph # Sent./Line #  
 Original Comment # 47

**Comment:** Figures 3-1, 3-2, and 3-3: The correlation of the Media and Remedial Action Objective with the remaining figure is unclear.

**Response:** Since the general response actions considered (institutional actions, containment/treatment, removal/treatment/disposal) all contribute to satisfying remedial action objectives for each media, it seemed cumbersome to connect (with solid lines) each general response action to each remedial action objective.

**Action:** None required.

48. Commenting Organization: OEPA Commentor:  
 Pg. # 3-39 Section # 3.2.1 Paragraph # Sent./Line #  
 Original Comment # 48

**Comment:** Page 3-39, Section 3.2.1: Additional information pertaining to the sanitary landfill is described in Section 1.5.2.1 and 1.5.3.1 rather than 1.2.3.1.

**Response:** DOE agrees.

**Action:** Text has been changed accordingly.

49. Commenting Organization: OEPA Commentor:  
 Pg. # Section # 3.2 Paragraph # Sent./Line #  
 Original Comment # 49

**Comment:** Section 3.2: The descriptions of the alternatives indicate that the perched groundwater treatment wellpoint system will be operated until contaminant concentrations are below levels of concern or the quantity of collected water becomes negligible. It should be noted, however, that the reduction of contaminant

concentrations below levels of concern may not indicate complete remediation of perched groundwater. Because of heterogeneities, desorption and "dead end" pore spaces contaminant concentrations may gradually increase after the cessation of pumping. Therefore, pulsed pumping may be necessary to adequately reduce contaminant concentrations through time. The negligible collection of water is also not an adequate reason for the termination of the wellpoint system. If the perched system is recharged, the perched groundwater would result in a migration pathway if the capping technology fails.

**Response:** As indicated in Table 3-1 through 3-3, wellpoint monitoring will be utilized for all alternatives involving perched groundwater treatment. Continual use of monitoring during and after remediation will assure that contaminant concentrations will remain below established cleanup levels. At this point in the FS additional detail is not warranted.

**Action:** No action required.

50.	Commenting Organization: OEPA Pg. # 3-42      Section # Original Comment # 50	Commentor: Paragraph # 1	Sent./Line #
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**Comment:** Page 3-42, first paragraph: since portions of 49 CFR 173 will need to be met for the packaging of radioactive materials for shipment off-site, this regulation constitutes a federal ARAR and must be listed in Appendix B.

**Response:** Per discussion with EPA, this regulation is not considered an ARAR; however, reference to it in the text is appropriate.

**Action:** None required.

51.	Commenting Organization: OEPA Pg. # 3-60      Section # Original Comment # 51	Commentor: Paragraph # 4	Sent./Line #
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**Comment:** Page 3-60, fourth paragraph: It is not clear why DOE believes that a permit would be required for on-property treatment of mixed waste. This type of on-site activity would be exempt from a RCRA permit as is stated in the first paragraph on page 3-66. The text should be corrected accordingly.

**Response:** DOE agrees. A RCRA permit would not be required for on-property treatment of mixed wastes.

**Action:** Text has been revised to delete reference to requirements for a RCRA permit for on-property treatment of mixed wastes.

52.     **Commenting Organization:** OEPA                     **Commentor:**  
           **Pg. #** 3-61     **Section #** 3.2.2                     **Paragraph #**                     **Sent./Line #**  
           **Original Comment #** 52
- Comment:**     **Page 3-61, Section 3.2.2: The alternatives described for the Lime Sludge Ponds should discuss what will happen to the current discharge of lime sludge into the ponds once remediation begins.**
- Response:**     Determination of the fate of current discharge of lime sludge once remediation begins is beyond the scope of the RI/FS for Operable Unit 2. Modifications to the Lime Sludge discharge system will not be addressed as part of the RI/FS Process.
- Action:**       Efforts are underway to resolve this issue outside of the RI/FS.
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53.     **Commenting Organization:** OEPA                     **Commentor:**  
           **Pg. #** 3-61     **Section #** 3.2.2                     **Paragraph #**                     **Sent./Line #**  
           **Original Comment #** 53
- Comment:**     **Section 3.2.2, Page 3-61: The last sentence should reference Sections 1.5.2.2, 1.5.2.3, and 1.5.3.2 rather than Section 1.3.1.2 and 1.3.1.3.**
- Response:**     DOE agrees.
- Action:**       Text has been changed accordingly.
- 
54.     **Commenting Organization:** OEPA                     **Commentor:**  
           **Pg. #** 3-70     **Section #** 3.2.2.4                     **Paragraph #**                     **Sent./Line #**  
           **Original Comment #** 54
- Comment:**     **Page 3-70, Section 3.2.2.4: This section fails to mention a remediation time frame for Alternative 4. If it is supposed to be the same as Alternative 3, then it should be stated in the text.**
- Response:**     DOE agrees.
- Action:**       Section 3.2.2.4 has been revised to include the remediation time frame.
- 
55.     **Commenting Organization:** OEPA                     **Commentor:**  
           **Pg. #** 3-74 & 3-76     **Section #**                     **Paragraph #**                     **Sent./Line #**  
           **Original Comment #** 55
- Comment:**     **Pages 3-74 and 3-76, Figures 3-16 and 3-17: The geology underlying the Fly Ash and Southfield Areas should be consistent between the these two figures. In other words,**

Figure 3-16 should show the sand lenses that are shown in Figure 3-17 and discussed in Section 3.2.3.2.

Response: DOE agrees.

Action: Figures 3-16 and 3-17 have been revised to be consistent.

56.	Commenting Organization: OEPA	Commentor:	
	Pg. # Section # 4.2.2	Paragraph #	Sent./Line #
	Original Comment # 56		

**Comment:** Section 4.2.2: This section should describe the role and definition of constructibility, reliability, maintainability, agency approvals, and special engineering, rather than how they relate to technical feasibility and administrative feasibility. These five implementability criteria are used in Section 5.0, therefore, a clarification is necessary.

**Response:** The discussion presented in Section 4.2.2 on implementability evaluation sufficiently covers the role and definition of constructibility, reliability, maintainability, agency approvals, and special engineering.

**Action:** No action required.

57.	Commenting Organization: OEPA	Commentor:	
	Pg. # Section # 5.1.3.1	Paragraph #	Sent./Line #
	Original Comment # 57		

**Comment:** Section 5.1.3.1: The reduction In TMV rating should be higher for this alternative than for Alternative 1 due to the reduction of mobility of contaminants to the groundwater.

**Response:** Leaving the waste in place constitutes a constant source of contamination, thus the lower ranking.

**Action:** None required.

58.	Commenting Organization: OEPA	Commentor:	
	Pg. # 5-4 Section # 5.1.4.1	Paragraph #	Sent./Line #
	Original Comment # 58		

**Comment:** Section 5.1.4.1, page 5-4: The reduction of the short-term environmental effectiveness rating to 2 due to dust, noise, and traffic is inappropriate. In comparison to the No-Action alternative, a rating of 3 would be more reasonable.

**Response:** DOE disagrees. Waste removal will create major short term environmental impacts.

**Action:** None required.

59. **Commenting Organization:** OEPA **Commentor:**  
**Pg. #** 5-5 **Section #** 5.1.4.1 **Paragraph #** **Sent./Line #**  
**Original Comment #** 59

**Comment:** Section 5.1.4.1, Page 5-5: The rationale given for this alternative resulting in a rating of 3 in the category of long-term effectiveness in protecting human health and the environment is misleading. The correct rationale would state that this alternative provides enhanced protection over that provided by alternative 1, but because the waste is stored onsite, it provides less protection than Alternative 4.

**Response:** DOE disagrees. The rationale stated in the cited paragraph is correct. Alternative 3 does utilize liners under the waste which provides additional protection. However, the reviewer's point that a comparison between alternatives 3 and 1/4 be made in the text is noted.

**Action:** Text has been clarified to draw a comparison to Alternatives 3 and 1/4.

60. **Commenting Organization:** OEPA **Commentor:**  
**Pg. #** **Section #** 5.1.4.1 **Paragraph #** **Sent./Line #**  
**Original Comment #** 60

**Comment:** Section 5.1.4.1, last sentence: See comment #57.

**Response:** See response to comment 57.

**Action:** None required.

61. **Commenting Organization:** OEPA **Commentor:**  
**Pg. #** **Section #** 5.1.5.1 **Paragraph #** **Sent./Line #**  
**Original Comment #** 61

**Comment:** Section 5.1.5.1: See comments #58 and #57.

**Response:** See response to comments 57 and 58.

**Action:** None required.



62.    Commenting Organization: OEPA                      Commentor:  
       Pg. #                      Section # 5.1.6.1, 5.1.7.1                      Paragraph #                      Sent./Line #  
       Original Comment # 62

**Comment:**    Section 5.1.6.1, and Section 5.1.7.1: See comment #58.

**Response:**    See response to comment 58.

**Action:**        None required.

63.    Commenting Organization: OEPA                      Commentor:  
       Pg. # 5-7                      Section # 5.1.6.2                      Paragraph #                      Sent./Line # last sent.  
       Original Comment # 63

**Comment:**    Section 5.1.6.2, Last Sentence, Page 5-7: Complexity of the proven technology was not a factor in the ratings of Special Engineering for Alternatives 1-4. For example, Alternative 4 is more complex than Alternatives 0 and 1, but the rating of special engineering was not reduced.

**Response:**    Since all of the technologies proposed for Operable Unit 2 are proven, special engineering is not a major difference between alternatives.

**Action:**        None required.

64.    Commenting Organization: OEPA                      Commentor:  
       Pg. # 5-8                      Section # 5.1.7.2                      Paragraph #                      Sent./Line # last sent.  
       Original Comment # 64

**Comment:**    Section 5.1.7.2, Last Sentence, Page 5-8: See comment #58.

**Response:**    See response to comment 58.

**Action:**        None required.

65.    Commenting Organization: OEPA                      Commentor:  
       Pg. # 5-8                      Section # 5.1.7.2                      Paragraph #                      Sent./Line #  
       Original Comment # 65

**Comment:**    Page 5-8, Section 5.1.7.2: Since no monitoring or maintenance will be required by DOE FMPC personnel for off-site disposal, Alternative 6 as well as all other alternatives which employ off-site disposal should be scored a "5" for

maintainability. Ohio EPA's position on this scoring is supported by DOE in the Final Initial Screening of Alternatives report for OU-1 which states: "This alternative will require no perpetual maintenance or monitoring because the waste will not be stored on property. This alternative rates a 5 in this category." DOE needs to work towards a more consistent presentation in its documents.

Response: DOE agrees.

Action: Text and tables have been revised in accordance with the comment.

66. Commenting Organization: OEPA                      Commentor:  
Pg. # 5-8              Section # 5.1.7.2              Paragraph #                      Sent./Line #  
Original Comment # 66

Comment: Page 5-8, Section 5.1.7.2, last sentence: This sentence refers to incineration occurring in Alternative 4 when it actually is only employed in Alternatives 5 and 6. The text should be corrected accordingly.

Response: DOE agrees.

Action: Text has been revised as suggested in the comment.

67. Commenting Organization: OEPA                      Commentor:  
Pg. # 5-11              Section # 5.2.4.1              Paragraph #                      Sent./Line #  
Original Comment # 67

Comment: Page 5-11, Section 5.2.4.1: This section discusses "off-site shipment of landfill wastes" when it's supposed to detail on-property disposal of lime sludge. The paragraph needs to be corrected.

Response: DOE agrees.

Action: Text has been revised as suggested in the comment.

68. Commenting Organization: OEPA                      Commentor:  
Pg. #                      Section # 5.2.4.1 & 5.2.5.1              Paragraph #                      Sent./Line #  
Original Comment # 68

Comment: Sections 5.2.4.1 and 5.2.5.1: See comment #58.

Response: See response to comment 58.

Action: None required.

69. Commenting Organization: OEPA Commentor:  
 Pg. # Section # 5.3.3.1, 5.3.4.1, 5.3.5.1 Paragraph # Sent./Line #  
 Original Comment # 69

**Comment:** Sections 5.3.3.1, 5.3.4.1 & 5.3.5.1: See comment #57.

**Response:** See response to comment 57.

**Action:** None required.

70. Commenting Organization: OEPA Commentor:  
 Pg. # Section # 5.3.4.1, 5.3.5.1, 5.3.6.1, 5.3.7.1 Paragraph # Sent./Line #  
 Original Comment # 70

**Comment:** Section 5.3.4.1, 5.3.5.1, 5.3.6.1 and 5.3.7.1: See comment #58.

**Response:** See response to comment 58.

**Action:** None required.

71. Commenting Organization: OEPA Commentor:  
 Pg. # R-2 Section # Paragraph # Sent./Line #  
 Original Comment # 71

**Comment:** Page R-2: USEPA's HEAST document is updated quarterly. It is obvious from this reference listing that DOE has used a HEAST version that is over a year old. This is unacceptable and is in part responsible for some of the deficiencies that Ohio EPA has noted with several of the RAO tables in this as well as other ISA reports.

**Response:** DOE agrees.

**Action:** The toxicity values presented in the discussion of RAOs will be updated to reflect the most recently available numbers.

72. Commenting Organization: OEPA Commentor:  
 Pg. # A-2 Section # A.1.2 Paragraph # Sent./Line #  
 Original Comment # 72

**Comment:** Appendix A, Page A-2, Section A.1.2: A point of clarification is needed here; solid waste cap design must minimally comply with the provisions of OAC 3745-27-08 and 3745-27-11.

**Response:** DOE agrees.

Action: Section A.1.2 has been revised to add references OAC 3745-27-08 and 3745-27-11.

73. Commenting Organization: OEPA Commentor:  
Pg. # Section # Paragraph # Sent./Line #  
Original Comment # 73

Comment: Appendix B, Water Well Installation: The description given is inaccurate and incomplete. The description of OAC 3745-9 should note that it regulates the installation and abandonment of wells and borings.

Response: DOE agrees.

Action: The description of OAC3745-9 has been revised accordingly.

74. Commenting Organization: OEPA Commentor:  
Pg. # B-9 Section # Paragraph # Sent./Line # 1st sent.  
Original Comment # 74

Comment: Appendix B, Page B-9, first sentence: DOE states that "There appears to be no precedent for using MCLGs to develop cleanup criteria for the national CERCLA program." This statement is a poor justification for not considering MCLGS, particularly non-zero MCLGs for the FMPC site and brings into question DOE's desire for a cleanup that is fully protective of public health. In 40 CFR 300.430 (e) (2) (B) , it clearly states: "Maximum contaminant level goals (MCLGS) , established under the Safe Drinking Water Act, that are set at levels above zero, shall be attained by remedial actions for ground or surface waters that are current or potential sources of drinking water, where the MCLGs are relevant and appropriate under the circumstances of the release...." (emphasis added) This sentence must be removed from the text.

Response: See the response to comment 18.

Action: See comment 18. The statement concerning using MCLGs for cleanup criteria has been deleted (note - revised text now appears on page B-8).

75. Commenting Organization: OEPA Commentor:  
Pg. # B-10 Section # Paragraph # Sent./Line #  
Original Comment # 75

Comment: Appendix B, Page B-10, Table B-1: Reference to OAC 3745-15-02 as an Ohio chemical-specific ARAR is incorrect. OAC 3745-15-02 is a statement of purpose for the state's air pollution regulations, not a chemical-specific ARAR.

Response: DOE agrees.

Action: The reference to OAC 3745-15-02 has been deleted from Appendix B.

76.	Commenting Organization: OEPA Pg. # B-11      Section # Original Comment # 76	Commentor: Paragraph #	Sent./Line #
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**Comment:** Appendix B, Page B-11, Table B-1: DOE states that ... 3745-01-4(D) sets criterion applicable to all waters... This is not the case. In its entirety, OAC 3745-1-04 (note the correct form of the citation) sets those criteria that are applicable to all waters. This inaccurate and incomplete citation should be corrected.

Response: DOE agrees.

Action: Reference to OAC3745-01-4(d) has been changed to OAC3745-1-04.

77.	Commenting Organization: OEPA Pg. # B-13      Section # Original Comment # 77	Commentor: Paragraph #	Sent./Line #
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**Comment:** Appendix B, Page B-13, Table B-1: Two action-specific state of Ohio ARARs should be listed here. They are OAC 3745-21-05 (Non-degradation policy) and 3745-21-07 (Control of emissions of organic materials from stationary sources) . Also, the citation of OAC 3745-9-10(C) should be to OAC 3745-9-10 as the entire section applies to the abandonment of test holes and wells, not just paragraph C.

Response: DOE agrees.

Action: The Ohio ARARs have been added and the entire section of OAC 3745-9-10 has been cited.

78.	Commenting Organization: OEPA Pg. # B-13      Section # Original Comment # 78	Commentor: Paragraph #	Sent./Line #
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**Comment:** Appendix B, Page B-13, Table B-1: OAC 3745-27 should be referred to as "Solid Waste Disposal Facility Requirements."

Response: DOE agrees.

Action: "Solid Waste Treatment Facility" has been changed to "Solid Waste Disposal Facility."

79.      Commenting Organization: OEPA      Commentor:  
Pg. #      Section #      Paragraph #      Sent./Line #  
Original Comment # 79

**Comment:**      **Appendix C, Table C-3, Quantities and Units: The use of the word "none" for "HSL Inorganics" and "HSL Semi-volatiles" is misleading. DOE needs to specify the difference between "no chemicals detected above background" and "no analysis performed". In order to correct this misrepresentation DOE should eliminate the use of the word "none" from all the tables in Appendix C and rely on more accurately descriptive language and/or footnotes.**

**Response:**      DOE agrees.

**Action:**      The tables in Appendix C have been revised to indicate which groups of chemicals were/were not tested for, and if chemicals tested for, were below minimum detection limits or available background levels.

**OHIO EPA COMMENTS ON REVISED OU 2 I.S.A. REPORT  
COMMENTS ON RESPONSE TO FMPC-0212-4 COMMENT**

**Comments on DOE Responses to Ohio EPA Comments**

1.	Commenting Organization: OEPA	Commentor:	
	Pg. #	Section #	Paragraph # 5
	Original Comment # 1		Sent./Line #

**Comment:** USEPA Comment 1: In the fifth paragraph of DOE's response to USEPA's comment, the DOE statement that "Where ARARs or TBCs are not available, preliminary remediation goals will be developed based on a  $1 \times 10^{-6}$  risk level" is inconsistent with the NCP. Further, this statement is contradictory with the third paragraph of page 2 of DOE's Response to Comments where DOE recognizes that "where ARARs do not exist for a constituent, risk-based cleanup goals will be developed." TBCs do not determine when the  $10^{-6}$  risk level is to be used. The NCP states: "The  $10^{-6}$  risk level shall be used as the point of departure for determining remediation goals for alternatives when ARARS are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure." (emphasis added) TBCs have nothing to do with determining when the use of a  $10^{-6}$  cancer risk is appropriate.

**Response:** This comment addresses two key issues which are the basis for preliminary remediation goals and acceptable levels for final remediation goals for radionuclides.

**Basis for Preliminary Remediation Goals**

In the ISA Report for Operable Unit 2, preliminary remediation goals are based on chemical specific ARARs, or if ARARs did not exist, they were based on TBCs, such as preliminary maximum contaminant levels (PMCLs), for individual contaminants and pathways. Final remediation goals considering all contaminants and pathways to a single potential human receptor will be developed in later stages of the RI/FS process. This is permitted by the NCP as discussed in the following:

"...preliminary remediation goals are developed based on readily available information such as chemical-specific ARARs or other reliable information. Preliminary remediation goals should be modified, as necessary, as more information becomes available during the RI/FS. Final remediation goals will be determined when the remedy is selected."  
(300.430(e)(2)(i))

**Acceptable Levels for Final Remediation Goals for Radionuclides**

The issue of developing final remediation goals based on acceptable levels of risk or radiation dose has not been resolved. Addenda to the FMPC RI and FS Work Plans are in preparation for submittal to USEPA for review and approval that will detail the methods for development of remediation goals using dose-based or risk-based levels and the methods for development of remediation action objectives from the remediation goals.

Action: Complete the addenda to the FMPC RI and FS Work Plans.

2. Commenting Organization: OEPA Commentor:  
Pg. # Section # Paragraph # Sent./Line #  
Original Comment # 2

**Comment:** OEPA Comment 1: DOE's response is unacceptable. As noted in Comment #1 above, DOE's statement that "If such guidance isn't (sic) available, preliminary remediation goals will be risk based using the 10-6 point of departure" is contradictory with an earlier statement (and inconsistent with the NCP) that "where ARARs do not exist for a constituent, risk-based cleanup goals will be developed." Delaying the proper development and use of risk-based criteria until the FS report or until the proposed plan is issued, as DOE suggests, is too late. Preliminary remediation goals must be developed conservatively and in a manner which is fully consistent with the NCP. Refinement of these goals at later stages in the RI/FS process to allow for higher (or lower) levels of risk may be necessary for various reasons, including technical impracticability. However, this decision-making process must be clearly documented along with defensible supporting rationale in the FS. To date, DOE has failed to do this.

**Response:** See the response to comment 1.

**Action:** See the action to comment 1.

3. Commenting Organization: OEPA Commentor:  
Pg. # Section # Paragraph # Sent./Line #  
Original Comment # 3

**Comment:** OEPA Comment 18: DOE's response is unacceptable. Basing preliminary remediation goals in the ISA Report on ARARS, other criteria, advisories, or guidance also requires the use of risk-based levels where ARARs do not exist. Ohio EPA strongly believes that, consistent with the NCP and absent ARARs, risk-based levels must be used to calculate preliminary remediation goals. (Risk-based levels do constitute TBCS.)

As has been pointed out by Ohio EPA on several occasions previously, DOE's own guidelines give values for carcinogenic risks that are outside the 10-4 to 10-6 risk range and do not consider the 10-6 risk level as the point of departure for determining site-wide remediation goals where ARARs do not exist or are not sufficiently protective - Delaying the proper development and use of risk-based criteria until the FS report or until the proposed plan is issued, as DOE suggests, is too late.

**Response:** See the response to comment 1.



Action: See the action to comment 1.

4. Commenting Organization: OEPA Commentor:  
Pg. # Section # Paragraph # Sent./Line #  
Original Comment # 4

Comment: OEPA Comment 19: Before Ohio EPA agrees to the use of DOE's 100-year current land-use scenario in the risk assessment for the FMPC, DOE will have to provide sufficient documentation as to the appropriateness of this type of current/future land-use along with assurance that access can be strictly controlled by DOE for 100 years.

Response: DOE disagrees with the comment. It is reasonable to assume that custodial care will be provided by the government for a period of up to 100 years. The 100 year period is not absolute. If other appropriate steps are implemented to eliminate unacceptable risks to the public, active security control measures may be removed in a shorter period of time.

Action: None required

5. Commenting Organization: OEPA Commentor:  
Pg. # Section # Paragraph # Sent./Line #  
Original Comment # 5

Comment: OEPA Comment 22: DOE's response is unacceptable. Since the new RCRA regulations do not constitute ARARS, it is inappropriate to use the  $10^{-4}$  risk level DOE claims is suggested by these proposed regulations as an acceptable level of site-wide risk. It is important to note that in its section-by-section analysis issued with the proposed RCRA Subpart S Rule, USEPA states that for carcinogens, "EPA believes that action , levels corresponding to a  $1 \times 10^{-6}$  risk level ... generally are appropriate." USEPA also states that "Using a value from the high end of this range [i.e.,  $10^{-6}$  ensures that the hazardous constituents screened out ... are those for which corrective measures are unlikely to be necessary" and further recognizes that "... $1 \times 10^{-4}$  risk levels of constituents may not be protective at all sites.... "

The NCP is the controlling regulatory framework under which the RI/FS is being conducted. As previously stated, the NCP requires the use of a  $10^{-6}$  risk level as the point of departure for determining remediation goals for alternatives when ARARS are not available or are not sufficiently protective (on a site-wide basis) because of the presence of multiple contaminants at a site or multiple pathways of exposure.

Response: See the response to comment 1.

Action: See the action to comment 1.

6. Commenting Organization: OEPA Commentor:  
Pg. # Section # Paragraph # Sent./Line #  
Original Comment # 6

**Comment:** OEPA Comment 27: DOE's response is unacceptable. It makes little sense to use USEPA's Health Effects Assessment Summary Tables for radionuclide potency when calculating risks for the baseline risk assessment yet maintain that cleanup levels for these same compounds should be based on dose-based criteria. Absent ARARS, HEAST must be used to develop risk-based cleanup levels.

**Response:** See the response to comment 1.

**Action:** See the action to comment 1.

7.	Commenting Organization: OEPA	Commentor:	
	Pg. #                      Section #	Paragraph #	Sent./Line #
	Original Comment # 7		

**Comment:** OEPA Comment 28: The background level for technetium (Tc-99) has been assumed by DOE to be zero since it is a fission product and not naturally occurring (DOE response to OEPA comment on OU-5 ISA report) thus it could not have been detected in levels below background. DOE needs to provide the levels at which Tc-99 was detected and to include it in the ISA as a contaminant of concern. DOE also should include this radionuclide in the baseline risk assessment (RA), since any detected level would be in excess of background and, consistent with USEPA's Risk Assessment Guidance for Superfund (RAGS, p. 5-20), must be included in the baseline risk assessment.

In addition, essential nutrients should be included in the RA dependent upon their concentrations in relation to background. The RAGS document provides justification for this position on page 5-23 stating: "In general, only essential nutrients present at low concentrations (i.e., only slightly elevated above background) should be eliminated to help ensure that chemicals present at potentially toxic concentrations are evaluated in the quantitative risk assessment. " Whether these nutrients are to be included in the risk assessment should be based on concentrations in relation to background. DOE must provide concentration levels and justification, based on background levels, for excluding these "nutrients" in the risk assessment.

**Response:** DOE agrees. Tc-99 could not be detected at levels less than background. Technetium-99 was not detected in any areas of Operable Unit 2 and therefore was not included as a chemical of potential concern.

It is agreed that essential nutrients, such as iron, magnesium, calcium, potassium, and sodium, should be evaluated in relation to background. However, due to the agreement between DOE and EPA, suspending document production, these will be evaluated at a future time.

**Action:** The references concerning evaluation of risks from essential nutrients in the baseline risk assessment have been deleted in the ISA report.

8. Commenting Organization: OEPA Commentor:  
 Pg. # Section # 3.0- Paragraph # Sent./Line #  
 Original Comment # 8

**Comment:** Response to EPA comments #31 and #71: Section 3.0 does not include a section entitled "Water Treatment" as described in the DOE response.

**Response:** Text has been moved to Section 2 of the Revised ISA (revisions 5 and 6).

**Action:** No action required.

9. Commenting Organization: OEPA Commentor:  
 Pg. # Section # Paragraph # Sent./Line #  
 Original Comment # 9

**Comment:** OEPA Comment 37: Due to a typographical error in OEPA's original comment, DOE appears to have misunderstood the comment as it pertained to the use of proposed MCLS. For any and all carcinogenic compounds that have a proposed MCL (i.e., a final MCL has yet to be promulgated), DOE must use the appropriate cancer slope factors to derive a  $10^{-6}$  cancer risk level as the remedial action objective. With respect to the use of non-zero MCLGS, non-zero MCLGs are indeed TBCS. (TBCS, by definition, are non-promulgated.) Justification for the use of non-zero MCLGs as remedial action objectives can be found in 40 CFR 300.430 (e) (2) (B) which states: "Maximum contaminant level goals (MCLGs), established under the Safe Drinking Water Act, that are set at levels above zero, shall be attained by remedial actions for ground or surface waters that are current or potential sources of drinking water, where the MCLGs are relevant and appropriate under the circumstances of the release...." (emphasis added) Table 2-4 (2-5 in the revised document) must incorporate the above comments. Additional comments pertaining to Table 2-5 in the revised report can be found in Comment #28 below.

**Response:** See the response to comment 1.

**Action:** See the action to comment 1.

10. Commenting Organization: OEPA Commentor:  
 Pg. # Section # Paragraph # Sent./Line #  
 Original Comment # 10

**Comment:** OEPA Comment 39: Contrary to what is stated in DOE's response to Ohio EPA's original comment, those federal standards listed in Table 2-6 (Table 2-4 in the revised ISA report) are not more restrictive than Ohio's standards. For example, Ohio's surface water quality standards for the following compounds are stricter than those federal standards that are listed in the table (Ohio standard in parentheses in  $\mu\text{g/l}$ ) : Acenaphthene (67), cadmium (0.6), chloroform (79), naphthalene (44),

pentachlorophenol (11.7), phenol (370), tetrachloroethane (73), trichloroethane (75), and nickel (115). These compounds, at a minimum, must be listed in Table 2-4.

**Response:** DOE agrees that more stringent state regulations will be referenced when appropriate.

**Action:** Table 2-4 has been revised to include Ohio surface water quality standards. For metals, a water hardness of 100mg/l as CaCO<sub>3</sub> has been assumed.

11.	Commenting Organization: OEPA	Commentor:	
	Pg. #                      Section #	Paragraph #	Sent./Line #
	Original Comment # 11		

**Comment:** Response to OEPA comment #45: The text has not been revised to include a discussion of TCLP testing of sanitary landfill waste.

**Response:** DOE agrees; however Section 2.0 was reformatted to include the identification and screening of remedial technologies within each general response action by waste unit followed by the identification and screening of process options within each technology by waste unit. A discussion of proposed TCLP testing of the material in the Sanitary Landfill is not appropriate for Section 2.0. What is relevant is that treatment technologies and associated process options were retained that would be applicable to potential characteristic hazardous waste detected as a result of TCLP testing.

**Action:** The fact that TCLP testing is to be performed for the landfill as part of the work plan addendum has been added to the text in Section 1.

12.	Commenting Organization: OEPA	Commentor:	
	Pg. #                      Section #	Paragraph #	Sent./Line #
	Original Comment # 12		

**Comment:** Response to OEPA comment #46: The revised ISA does not include the same Table 2-7. Technologies are now presented on page 2-21, but subsurface flow control is not listed.

**Response:** See response to EPA comment 35 on the draft final (Jan. 9, 1991 version 0212-5) ISA report.

**Action:** See action for EPA comment 35.

13.	Commenting Organization: OEPA	Commentor:	
	Pg. #                      Section # 2.4.1.2	Paragraph #	Sent./Line #
	Original Comment # 13		

**Comment:** Response to OEPA comment #47: It is not clear what section of the revised text

differentiates between characteristic and listed hazardous wastes as Section 2.4.1.2 does not relate to the lime sludge ponds.

**Response:** As stated in the response to Comment 11, Section 2.0 was reformatted. More detailed discussions of technologies/process options that were retained are included in Section 2.0. Treatment technologies that have been retained would be applicable to listed and characteristic hazardous waste. Treatment technologies/process options were retained in order to account for contaminants that may be detected as a result of additional sampling. Differentiating between listed and characteristic hazardous waste is not applicable when screening treatment technologies in Section 2.0.

**Action:** No action required.

14.	<b>Commenting Organization:</b> Pg. #            Section # Original Comment # 14	<b>Commentor:</b> Paragraph #	Sent./Line #
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**Comment:** OEPA Comment 60: The reason OEPA had originally noted that 49 CFR 173 be listed as an action-specific ARAR was because offsite transport of site wastes was a possibility. The revised ISA report for OU-2 considers off-site transportation and disposal of wastes (e.g., Alternatives 4 and 6). Therefore, transportation requirements must be listed in Appendix B as action-specific ARARS.

**Response:** DOE disagrees. Previous discussions with EPA have reached agreement that this is not an ARAR.

**Action:** None required.

15.	<b>Commenting Organization:</b> OEPA Pg. #            Section # Original Comment # 15	<b>Commentor:</b> Paragraph #	Sent./Line #
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**Comment:** Response to OEPA comment #66 and #81: References to the RI report have not been eliminated from the revised ISA.

**Response:** DOE will substitute "results of field investigation" for reference to RI.

**Action:** Text has been revised.

16.	<b>Commenting Organization:</b> OEPA Pg. #            Section # Original Comment # 16	<b>Commentor:</b> Paragraph #	Sent./Line #
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**Comment:** OEPA Comment 69: See Comment #6 above.

**Response:** See response to comment 1.

**Action:** See action for comment 1.

17.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> <b>Section #</b> 3.0 <b>Original Comment #</b> 17	<b>Commentor:</b> <b>Paragraph #</b>	<b>Sent./Line #</b>
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**Comment:** Response to OEPA comment #82: Soil washing is not discussed in section 3.0.

**Response:** Due to reformatting of the report, soil washing is discussed in Section 2.0 (Pg. 2-40) as part of the identification and screening of technologies and process options. Soil washing is retained as a process option during the development of alternatives in Section 3.0, but is not chosen as a treatment option for removal alternatives.

**Action:** No action required.

18.	<b>Commenting Organization:</b> <b>Pg. #</b> <b>Section #</b> <b>Original Comment #</b> 18	<b>Commentor:</b> <b>Paragraph #</b>	<b>Sent./Line #</b>
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**Comment:** Response to OEPA comment #85: Tables 3-1 through 3-3 have not been changed to read "runon/runoff."

**Response:** DOE agrees.

**Action:** Tables 3-1 through 3-3 have been revised to include run-on/runoff control.

19.	<b>Commenting Organization:</b> OEPA <b>Pg. #</b> <b>Section #</b> <b>Original Comment #</b> 19	<b>Commentor:</b> <b>Paragraph #</b>	<b>Sent./Line #</b>
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**Comment:** OEPA Comments 89 and 91: Since no monitoring or maintenance will be required by DOE-FMPC for off-site disposal, it should score a "5" for all alternatives which employ off-site disposal. Ohio EPA's position on this scoring is supported by DOE in the Final Initial Screening of Alternatives Report for OU-1 which states: "This alternative will require no perpetual maintenance or monitoring because the waste will not be stored on property. This alternative rates a 5 in this category." DOE needs to ensure some consistency in its documents.

**Response:** DOE agrees.

**Action:** Maintainability has been given a more favorable ranking for off-site disposal alternatives than for on-site disposal alternatives.

20.    **Commenting Organization:** OEPA                      **Commentor:**  
       **Pg. #**                      **Section #**                      **Paragraph #**                      **Sent./Line #**  
       **Original Comment # 20**

**Comment:**    **Response to OEPA comment #91: Long-term management, monitoring and maintenance at existing off-site disposal facilities should not be factors in the screening process. These are provided for in the cost associated with off-site disposal.**

**Response:**    The unit cost used to estimate the cost of an off-site disposal facility does include long-term management, monitoring and maintenance. As stated in Comment No. 19, OEPA implicitly states that maintainability should receive a more favorable ranking for off-site disposal alternative; however, this comment states that "long-term management, monitoring and maintenance at existing off-site disposal facilities should not be factors in the screening process."

**Action:**        No action required.

21.    **Commenting Organization:** OEPA                      **Commentor:**  
       **Pg. #**                      **Section #**                      **Paragraph #**                      **Sent./Line #**  
       **Original Comment # 21**

**Comment:**    **Response to OEPA comment #100 and #103: The DOE response does not address the OEPA comment.**

**Response:**    DOE disagrees. Comments 100 and 103 take issue with the low rankings of alternatives 2 and 3 (as defined in the level 4 draft). Comment 99 takes issue with the rankings as well. All responses were consolidated and presented with comment 126, since 126 took issue with the deletion of these alternatives.

**Action:**        No action required.

22.    **Commenting Organization:** OEPA                      **Commentor:**  
       **Pg. #**                      **Section # 5.1.2.1, 5.3.5.1**                      **Paragraph #**                      **Sent./Line #**  
       **Original Comment # 22**

**Comment:**    **Response to OEPA comment #112: The DOE response contradicts the rationale regarding short-term public health protection presented in the ISA. For example,**

Section 5.1.2.1 indicates that in Alternative 1 the risk to workers will be minimal because the wastes will not be removed. Therefore, a high rating of 4 was assigned. In addition, Section 5.3.5.1 states that worker exposures are higher for removal than for nonremoval alternatives. Because the determination of short-term public health effectiveness is based on onsite workers as well as the public in the vicinity of the site, the rationale present in the response to OEPA comment #112 is not consistent with the effectiveness evaluations presented in the ISA.

**Response:** DOE agrees. Short-term public health and environmental effectiveness are ranked more favorable for non-removal alternatives than for removal alternatives in the revised ISA.

**Action:** No action required.

23.	Commenting Organization: OEPA	Commentor:	
	Pg. #            Section #	Paragraph #	Sent./Line #
	Original Comment # 23		

**Comment:** Response to OEPA comment #115: It seems that the definition of Agency Approvals has changed in comparison to previously submitted ISA documents. For Example, Section 5.1.2 of the September 1990 Draft ISA for OU-3 states that Agency Approvals rely on the ability to comply with substantial requirements of permits consistent with 121(e) of CERCLA and specific provisions of interagency agreements. Alternative screening in Chapter 5 of the OU-4 ISA. August 1990, indicates that ratings for agency approvals were low when no remediation or mitigation was provided for in the alternative. Ratings were also low if the alternative would prove to be difficult in gaining "agency approval." Given this background, the criteria should be addressing whether an agency will approve of the no action alternative. Permitting and licensing approval previously have been considered a factor in administrative feasibility.

**Response:** The response given to comment 115 is based on EPA's own guidance document. Specifically, agency approval refers to the ability to obtain permits for offsite actions. The rankings presented within the OU 2 ISA report are consistent with this philosophy.

**Action:** None required.

24.	Commenting Organization: OEPA	Commentor:	
	Pg. # B-6            Section #	Paragraph #	Sent./Line #
	Original Comment # 24		

**Comment:** OEPA Comment 129: The revision made by DOE is not quite accurate. On page B-6 for Water Well Installation, the text should read as follows: "Installation and abandonment of new wells and borings.... "

**Response:** DOE agrees.



Action: Text has been revised to incorporate the comment.

25.	Commenting Organization: OEPA	Commentor:	
	Pg. #	Section #	Paragraph #
	Original Comment # 25		Sent./Line #

Comment: OEPA Comment 132: For the record, OAC 3745-27-07 does constitute a location-specific state of Ohio ARAR, even though portions may pertain to permitting. In any event, DOE will need to comply with the substantive portions of the regulation. Hence, it is unclear why DOE disagrees with OEPA's original comment and states in its response that no action is required. The regulation was in fact added to the ARARs table as OEPA stated that it should be.

Response: Noted.

Action: None required.

[END OF COMMENTS ON RESPONSES TO COMMENTS]